DOMESTIC ENGINEERING

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The "Good Old Days?" Are Gone

With the advent of the latest developments in modern sanitation, and sanitary methods and conveniences in public utilities in proportion to the density of community populations, there has been an almost complete elimination of the use of the familiar adage "those good old days." There was a time when we would often hear a person complain of conditions of today, and almost in the same breath refer to conditions which existed "in those good old days." These same persons have since been educated to a full understanding of advancements made and opportunities presented with **the present.** Every phase of commercial life is moving. In commerce the moving finger of time is ever pointing upward and onward; not backward to "those good old days."

The man who constantly harped on things of the past is the man whose progress was as that of the tumble-bug. The **great present** was not in his eye. He could not see the world of opportunity before him. It did not occur to him that the thing most needed **now** is **men,**—real men, whose identity with industry and commerce is for the betterment of the general conditions of the universe.

There never was any time like the present in the plumbing and heating trades. **This is the time to begin,** if you have not already done so. Yesterday is past; if you did not make some mistakes it is a sign you were not very busy. The thing to do is not to make the same ones today. All the worry we can give to mistakes of yesterday will not blot them out, so why think about them. The thing to do is not to make the same ones today. If master plumbers and master steam-fitters can think of something that is past, or something that is established, with pleasure it becomes an incentive to try for a place further up the line. But if there is a tendency to look upon the accomplishments of the past as greater than those of the present, there may incidentally be an application of the brakes instead of a touching up of the accelerator.

Glancing for a moment at the plumbing, heating and ventilating trades direct, we see that many men of these trades have a little bit more than kept pace with the onward march of business pursuits—but not all of them. A few years ago the majority of men of these industries were said to be botchers and bunglers, with crude methods and devoid of business acumen. The makers of appliances were said to be ever ready to place the master operators in the trades to a disadvantage with products containing little or no quality. But how different now—today we find the trades completely and efficiently organized for the purpose of making progress more noticeable. Manufacturers are supplying the trades with trade-marked products of known quality, and we have arrived at the period of progressiveness when the master plumber and master steam-fitter should be more than the names imply.

Methods of the masters of the trades have kept pace with those of the manufacturers, and improvements in business methods have been shown which come of much study, inventive genius and consideration of the rights of others and the requirements of the public. Who of us would want to go back to "those good old days?"

There is a disposition on the part of a great many to discredit what has been and what is being done, but the "knocker" is ever with us, and it is one of our pleasant duties to convert him into a "booster." This is often done by setting him a good example and "killing him with kindness." Not many men in business fail to recognize a kindness from a competitor. Happy indeed will it be for the business world when it learns fully the lesson "co-operation and not competition is the life of business." Most of the progress of plumbing and heating industries has been made by exercising this principle, and to the men who had the courage to do it first belongs the credit.

Steam Heating Large Department Stores

Its Relation to Their Electrical Requirements With Much Valuable Information Concerning the Most Economical System for Such Service

By David S. Boyden

Paper Read Before the Annual Meeting of the American Society of Heating and Ventilating Engineers, Held in New York City, January 23-25, 1912

A few years ago one of the largest department stores of Boston had commenced the erection of a new building, which would about double its floor area. Up to this time the store had operated its own isolated electric plant, and plans for a new plant were under way. It was then brought to the attention of those in charge that central station electric service would save the large investment and a considerable amount on the operating costs of an isolated plant.

The operating costs of the proposed plant and the cost of central station service combined with the operating of a steam heating plant were threshed out among several of the best engineers, each one furnishing his own estimates. These estimates on the plant costs and on the

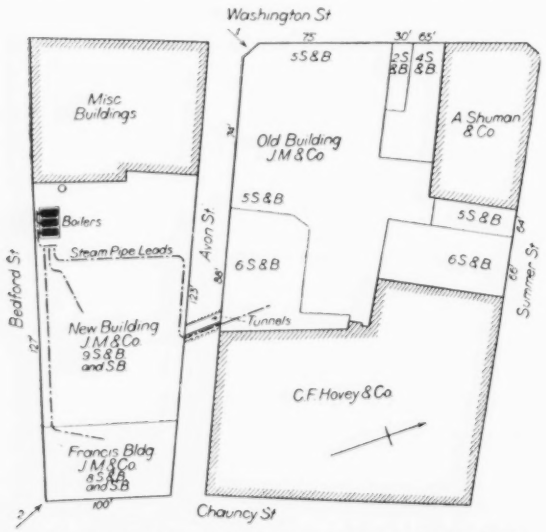

Fig. 1. Block Plan of the Building Showing Boiler Plant.

electric consumption varied somewhat, but when it came to the cost of operating the boilers for steam heating, only, there was a very wide difference in the estimates of the engineers and all were much about the figure estimated by the central station people for operating the heating plant. This wide variation only shows the great lack of information on the subject of steam heating and the fact that its relation to the electric requirement is most generally over-estimated. The central station people received a long term contract for the electric service, and the actual cost of operating the steam-heating plant during the past two years has fallen well within the estimate made by the engineers of the central station company.

The department store occupies three large buildings, the Old Store having a floor area of 273,400 sq. ft., the Francis building having 69,400 sq. ft. of area, and the Avon Street building having 295,000 sq. ft., making a total floor area of about 637,800 sq. ft. The Avon Street and Francis buildings adjoin each other and a tunnel under the street connects these buildings with the Old Store. The Old Store consists of a number of adjoining brick and stone buildings of varying architecture from four to seven stories high, with basement. The Avon Street building is of steel construction, terra cotta finish, nine stories high, with basement and sub-basement. The Francis building is also of steel construction, brick finish, eight stories high. The accompanying plan shows the arrangement of the buildings and surroundings and the photographs give a clear idea of the building construction. The arrows, No. 1 and No. 2, on the plan show the points from which the photographs were taken.

Steam is furnished from the three 250-h.p. Babcock & Wilcox boilers located in the sub-basement of the Avon Street building. These boilers are hand fired, and have projecting furnaces of the so-called Dutch oven type. The boilers are operated only during the heating season, live steam for the small summer requirement being furnished through a steam main from the boilers in a neighboring building.

The steam heating system of the Old Store is of the direct-pressure type, with the exception of the basement, which has an indirect system of heating with forced ventilation. Hand control is used throughout this building, the returns being trapped to the receiver in the boiler room.

The new Avon Street building and the Francis building have indirect heating on the first floor as well as the basement, this heating being automatically regulated by Johnson thermostats. The direct radiation on the upper floors is fitted with the D. G. C. automatic return valves, which discharge the condensation direct to the open receiver. The pressure carried on the direct radiation varies from 3 to 6 lb., according to the weather.

The radiation surface and other data regarding heating is given in the accompanying table:

Test of the Heating Plant.

	Outside volume Including Basement cu. ft.	Exposed Wall Surface sq. ft.	Exposed Glass Surface sq. ft.	Mechanical Ventilation cu. ft. fresh air per min.	Direct Radiation sq. ft.	Indirect Radiation sq. ft.
Old store	3,706,700	50,353	17,251	40,000	8,122	1,936
Avon street bldg.	3,836,000	28,030	26,519	68,000	11,595	4,182
Francis bldg.	848,300	16,541	7,129	.....	4,368	....
Totals	8,391,000	94,924	50,899	108,000	24,085	6,118

In order to study the daily load curve of the steam heating plant as compared with the electric load curve and also to determine the efficiency of the boilers, a two days' test was made on the heating plant.

A number of thermometers were placed throughout the buildings and readings taken hourly at two points on the first and third floors and at one point on the fifth floor of the Old Store, and at one point on the first, third, fifth and seventh floors of the Avon Street and Francis build-

ings. Temperatures were also taken on the roof of the Old Store and the Francis buildings while the store was open and access could be had to the roof. The outdoor temperature was taken hourly in Bedford Street near the boiler room door.

On the boiler test, the amount of steam used for heating is considered to be the total water fed to the boilers and this is true except for steam used by the boiler-feed pump and the small amount used in the kitchen and for hot water. The feed water was measured by a hot-water meter connected in the feed line. Hourly readings were taken on this meter, care being used to keep a constant water level in the boiler. The coal burned during the test was weighed out in 500 lb. lots as fired, but no attempt was made to keep a record of the coal burned each hour, this being affected by any change in thickness of the fire. Other readings taken in connection with the boiler test were feed water temperatures, boiler pressures, and pressures in the lines to the buildings all taken at 15-minute intervals.

Calibration tests were made on the hot-water meter after using, and a plot of corrections made. The meter was found to read about 4 per cent low for flows of 2.5 cu. ft. per minute and greater. For less than 2.5 cu. ft per min., the error increased to as much as 15 per cent low at 1 cu. ft. per minute, although this should be expected when the meter is designed for measuring a much greater capacity. The corrections from the calibration curve were then applied to the readings of the hot-water meter. The results of the boiler test were as follows:

Boiler Test.

Duration of run, hr.	48
Total water evaporated, lb.	429800
Total coal burned, lb.	47803
Boiler pressure, lb.	77.5
Feed water temperature, deg. F.	211.8
Water per lb. coal actual, lb.	8.98
Water per lb. from and at 212 deg., lb.	9.30
Boiler horse power	268.3

Fig. 2. View in the Boiler Room.

Average Pressures on Heating Lines.

1—Intermediate pressure line, lb.	33.7
2—New store direct radiation, lb.	4.03
3—Old store direct and indirect radiation, lb.	3.46
4—Francis building direct radiation, lb.	1.04

The temperatures at different points in the buildings do not vary widely at any time, and the average for the whole store is used in the plot, Fig. 3. The top curve shows how the average inside temperature varies throughout the day. The temperature falls to 67 deg. during the early morning hours, rising to 70 deg. as the Christmas crowds invade the store. A maximum of 71 deg. is reached when the store closes, the building gradually cooling off again to 67 deg. during the night.

The second curve shows the changes of outside temperature on this day, which is typical of a December day during settled weather.

The bottom curve represents the coal burned that day apportioned according to the boiler feed water meter readings. The rise in this curve from 1 a. m. to 4 a. m. is due to the turning on of steam in the Avon Street building, which had been turned off since six o'clock the night before. The more pronounced rise between 5 and 6 a. m.

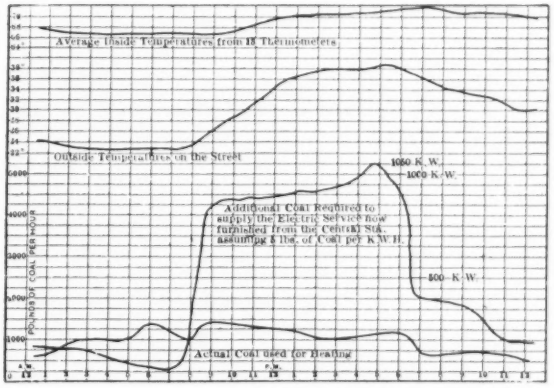
Average Inside Temperatures from 18 Thermometers
Outside Temperatures on the Street
1050 K.W.
1000 K.W.
Additional Coal Required to supply the Electric Service now furnished from the Central Sta. assuming 5 lbs. of Coal per K.W.H.
800 K.W.
Actual Coal used for Heating
POUNDS OF COAL PER HOUR
A.M.
P.M.

Fig. 3. Results of Tests Made Dec. 20, 1911.

was caused by the turning on of steam and the opening of the air cocks in the radiators in the Old Store. The rise at 8:30 a. m. is due to the starting up of the fans of the indirect heating system. The gradual increase in steam after 3 p. m. follows the setting sun and the drop at 6 o'clock is due to the shutting down of the fans.

To show the close relation between the coal burned each month for heating and the average outside temperature we have made the plot given in Fig. 4. As these quantities vary inversely we have plotted the solid line representing coal burned to read up and the dotted line of average temperatures to read down. The slight variation in the form of these curves during the heating season is due somewhat to outside influences, such as wind and humidity, but principally to the lack of control of the hand-operated radiator valves. We find that similar curves for buildings having thermostatic control of the heating conform much more closely with one another. If 65-deg. average temperature is used to represent zero coal demand, a much closer co-ordination of results is obtained.

Electric power and light is furnished from the central station, the standard recording wattmeter accurately measuring the electric consumption. An automatic tape device is also connected with the wattmeters to record the exact consumption throughout the day and these records are on file for reference. The present electrical connected load is as follows:

Incandescent lamps	1998 kw.
Arc lamps	653 kw.
Iron and electric heating	6 kw.
Elevator motors, 689	514 kw.
Other motors, 287	236 kw.
Total connected load	3407 kw.

The highest demand which has yet been recorded is 1,054 k.w., which is 31 per cent of the connected load. This is of considerable interest, because in the case of an isolated plant the generator capacity installed would be from 50 to 70 per cent of the connected load, not al-

lowing for spare units, when less than one-third of the connected load is the maximum which is used for any half hour. The yearly load factor figured on a 24-hr. basis throughout the year is also of considerable interest to the engineer estimating on the electric consumption of this class of building. The load factor, or the ratio of the average consumption to the maximum is only 30 per cent. The ratio of the average consumption to the total connected load is there 31 (per cent) × 30 (per cent) = 9.3 per cent.

As all the necessary data are now at hand for the consideration of the operation of an isolated electric plant, we will take up this phase of the subject.

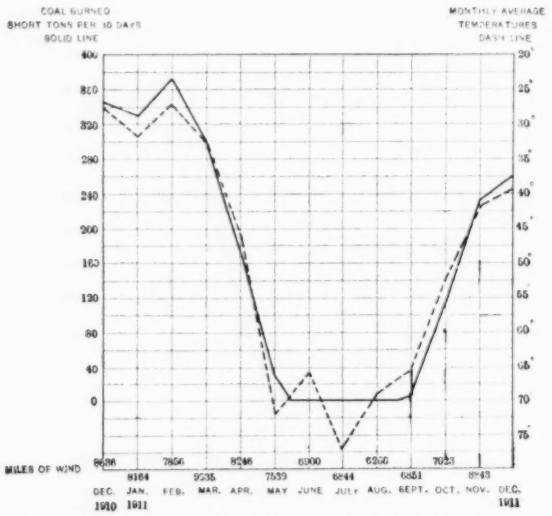

Fig. 4. Relation Between Coal Burned for Heating and the Average Monthly Temperature.

The proposed plant, which was not installed, was to have tandem-compound non-condensing engines, which were estimated to generate 1 kw. hr. on 5 lb. of coal, the exhaust steam being passed through a feed-water heater. We will then multiply the hourly electric consumption for December 20 by 5 lb. of coal and plot this as the additional coal required to supply the electric service. The lack of co-ordination of the two loads is very evident from the plot, Fig. 3, a considerable amount of live steam being used during the night for heating, and by far the greater part of the exhaust from the plant being wasted during the day and evening.

The actual coal burned for heating on this day was 24,000 lb. The electrical consumption for this day would require 60,485 lb. of coal. If the same standard of heating is maintained with the isolated plant as with the heating the plant, an additional amount of live steam will be required between the hours of 2 and 8 a. m. This live steam will be equivalent to 4,250 lb. of coal or 17.7 per cent of the total coal for heating. The total coal used by the isolated plant will be 64,735 lb. The percentage of exhaust from the plant which may be used for heating will then amount to 32.6 per cent for this particular day.

We will now assume that this is a fairly average day for the heating season, there being colder and warmer weather when more or less live steam would be required. The total coal used for steam heating during the past 12 months was 1,921 tons. We will assume that 17.7 per cent of this would have been live steam from the isolated plant leaving 1,580 tons as the portion of the year's coal which might have been furnished from the plant exhaust. The electric current consumed during the past year if the same were generated at an isolated plant would require 6,941 tons of coal, figured at 5 lb. per kilowatt-hour. The portion of this exhaust steam which would be used for heating will be 1,580 ÷ 6,941, or only 23 per cent, the remaining 77 per cent of the steam being used non-condensing with poor economy.

The total cost for operating the heating plant for the year ending November 30, 1911, was $8,582.29, during which period 2,776,370 kw. hr. of electricity were used on the premises. Dividing the cost of heating by the kilowatt-hour use, we find the cost of heating equivalent to 3.0909 mils per kilowatt-hour used. Should we make a reduction of the cost of coal required to furnish the live steam for heating, which is 0.5471 mil per kilowatt-hour use of electricity, we have the total value of the exhaust steam per kilowatt-hour or 2.5438 mils.

Itemized Cost of Heating with Equivalent Cost per Kilowatt-Hour Use of Electricity.

Item	Cost for year ending Nov. 30, 1911	Mils per kw.-hr. use
Miscellaneous expense	$ 122.84	.0442
Fuel	5,718.14	2.0596
Water	229.94	.0828
Oil and waste	7.35	.0026
Labor	2,331.44	.8391
Repairs to mechanical appliances	38.20	.0138
Repairs to boilers	134.38	.0488
	$8,582.29	3.0909

It may be a ready means of comparison to append the following deductions.

The Relative Cost of Steam and Electric Service per Cubic Ft. of Space and per Sq. Ft. of Floor Area.

	Cost per cu. ft. of volume.	Cost per sq. ft. of floor area
Steam	$0.00102	$0.01345
Electric	.00641	.08436
Total	.00743	.09781

OBITUARY.

Greenleaf S. Tukey.

Greenleaf S. Tukey, inspector of plumbing for the towns of Reading and Wakefield, Mass., for periods of 19 and 17 years respectively, died at his home in Reading May 5th. He was 68 years of age, a native of Cambridge, Mass., and had resided in Reading for 28 years. Previous to going to Reading he was a member of the Boston Police department for a few years. A widow and one son survive.

Charles L. Goodhue.

Charles L. Goodhue, of Springfield, Mass., who for many years was actively engaged in the plumbing business, died in that city last week. He was born in Ipswich, Mass., in 1838. After graduating from the public schools of his home town Mr. Goodhue went to Springfield and was apprenticed to the plumbing firm of Knight & Cooper. After four years he engaged in the business for himself but left at the outbreak of the Civil war to go to the front. On his return he bought out the plumbing business of R. E. Cooper in Springfield and later he branched out into the contracting line and was known of late years principally for his work in installing waterworks systems and the like. A daughter and two brothers survive.

John W. Ladd.

John W. Ladd, a prominent master plumber, of Epping, N. H., died at his home in that town on May 14th, at the age of 55 years. He was born in Epping and had always made his home in that place.

"Plumbing for Profit"—Part VI

The Question of Consequential Damages—Why Is the Master Plumber, as a Contractor, in a Class by Himself in Relation to the Work Performed in Building Construction?

By J. J. Cosgrove

"Fools argue, wise men discuss."

From now on for several months we are bound to hear more or less about consequential damages. In order that we may have a comprehensive understanding of the term, we will explain what it means right here. Suppose, for instance, a plumber installs the plumbing in a building, turns on the water, everything is sound and tight, and he goes off about his business. Next the owner or a tenant moves in and takes possession of the premises. At some subsequent time, it may be days, weeks, months, or even years, one of the water pipes bursts or springs a leak at a joint, and the water floods the building. Immediately the owner looks around to see who he can make pay for the flooding—who he can stick for that elusive will-o'-the-wisp damages, the lawyers hold up so temptingly before the public's eyes. In taking an inventory of the damage for this purpose, old rag carpets become transformed into Oriental rugs; cheap pictures are metamorphosed into works of old masters, and second-hand books become precious volumes of priceless values. Of course all of these have been hopelessly destroyed by the water, are of no value now, and the question is who shall pay for them. Must the plumber stand the loss; is he to be held responsible for consequences following the use of defective materials, although he did not know they were defective, or does the loss become incident to the risk of the occupancy of a building which the tenant must assume? If the plumber should be found or held responsible, then it would add still another risk and uncertainty to the many he must now assume as incident to his calling; and the problem is to prevent the public from looking to the plumber for reinbursement in such cases, for once the doctrine gained a foothold, it would spread like wildfire, and there is no telling where it would end.

At the present time it is the ghost of a remote possibility, and that is what we want to keep it, for, although in almost every case the plumber could show that he was in no way responsible, therefore not subject to damages, still a law suit, even to the winner, is something that leaves a bad taste in the mouth, and might better be avoided.

First, let us take up a few defenses which will help the plumber, who is so unfortunate as to be cited to defend himself in a case of consequential damages, escape from that predicament. Suppose, for instance, it is a water pipe which has broken and flooded the building, ruining valuable property. The first thing to ascertain is how long the work has been installed, where the leak occurred, and what was the cause of the leak. If the plumbing has been used during cold weather and the water in the pipes was ever frozen, it would be likely to weaken the pipe at some point, and that should remove all further responsibility from the plumber. All that he can do is to see that the work is strong and tight when he leaves it. Nobody can prevent plumbing work from depreciating. The plumbing in all buildings depreciates more or less. This is a significant fact for the plumber to bear in mind, as it is a valuable asset to him in his business.

Again, what is the nature of the water flowing through the pipes? Some waters are very destructive to water pipes, eating through them or weakening them so they fail in a very short time after they are put in. The character of the water, then, is a very important subject to consider. In the case of depreciation from this cause, whatever pitting or corrosion is present will be found on the inside, and pieces of pipe cut from the line will be good exhibits at a trial. Next, a very important point to consider is what stray currents of electricity, if any, are flowing over the pipes. So long as the pipes are exposed to electric currents there is great liability of electrolysis taking place and destroying the walls of the pipe. In the case of electrolysis, however, the pitting, unlike that from corrosion, would be on the **outside** of the pipe, working its way in.

Another point which ought to have a strong bearing on the subject, is the thickness of the walls of the pipe, and the pressure of water carried in the mains. If the pipe is not of sufficient strength for the pressure of water to be carried, but was put in on the authority of the architect's specifications, then, so long as the plumber had done the work as called for, it should relieve him from all responsibility, even though the pipes were not strong enough.

In the case of defects in the drainage system the plumbers can protect themselves by the simple expedient of testing the work and proving it tight before leaving it and this is an innovation which ought to be brought about by the master plumbers themselves. In cities where there are plumbing codes a roughing-in test is generally required now; but outside of any requirement of the code the testing of plumbing should be the rule instead of the exception; not only a water test, but likewise a smoke test. This testing of work ought to be a distinguishing feature between master plumbers and outsiders. One of the most effective ways of warding off any possibility of loss from a suit for consequential damage, is to test thoroughly all work before leaving it. The plumber who can go on the witness stand and swear the work was absolutely tight when he left it, is in a much better position than the one who has not tested his work and does not know. If a plumber, carelessly, ignorantly or indifferently allows defective work to remain, when a few precautions would have disclosed the fact so the weak points could be strengthened, lays himself open for consequential damages, and in all fairness and justice ought to be made pay them. The only real, sure way to be safe is to leave the work in a perfectly sound and workmanlike condition **and be sure it is so.** Do not guess at it or take any risks. Adopt the old motto; "Be sure you are right and then go ahead." Remember consequential damages are not small ones, and one such case a year would skim all the cream off the profits.

Another condition to take into consideration when so unfortunate as to be cited to trial, is the settlement and shrinkage of the building. Every building settles and shrinks more or less, and the question is to ascertain whether this shrinkage or settlement has caused the pipes to leak. But the settlement and shrinkage of buildings is a two-edged sword which is capable of cutting both ways. For instance, suppose the defense were to interpose the plea that the water supply and drainage pipes were in good condition when installed, but that subsequent settlements and shrinkages had pressed upon certain parts, thereby splitting the pipes or breaking the fittings. Such a defense would not answer at all, for it would be immediately shown that settlements and shrinkages being common to all buildings, the contracting plumber should have taken these movements into consideration. The only way to escape responsibility from this cause is to so install all work that the pipes themselves, or the system as a whole, cannot be affected by any movement which takes place, whether it is the building which moves, or the stacks which settle from their own weight. It is also necessary to find out whether or not the settlements and shrinkages have been abnormal, and far more than a careful designer would allow for.

It would seem as though consequential damages might be made the subject of a special committee of the Master Plumbers' Association to see that all members are posted as to the various agencies which could cause damage to the plumbing after the lapse of time; how to prevent deterioration of the plumbing work; and how best to keep this possibility of great loss from becoming anything more than a possibility. It would seem to the writer that the very best way to erect a safe barrier against this possibility would be for every plumber belonging to the Master Plumbers' Association to have printed on all of his stationery, a simple statement to the effect that under no consideration would he be responsible for consequential damages. It might be a good plan for the Master Plumbers' Association to help defend any suit brought against a member, paying part of the cost, and not through carelessness or indifference allow court rulings to pile up holding the plumbers responsible. It will be well worth the efforts of the plumbers to act on these suggestions, for the "bugbear" which is always cited by the jobbers when a manufacturer wants to guarantee his goods, to the extent of replacing those found defective, is that such a policy will open the door wide to that dread enemy, consequential damages. If the entire trade worked in harmony in this matter for a few years, thereby establishing a trade usage, even in case the disclaimer happened to be absent from a contract signed by a plumber, the courts would be liable to look upon the trade usage as so strongly established that the contracting plumber could not be held for consequential damages. At all events, it will be another safeguard to throw around the trade, which will make the future efforts count for profit.

There is no more reason why a plumber should be held responsible for after damages to a building caused by the subsequent leak of a water pipe or drainage pipe, than is a carpenter or mason in case the roof leaks, plaster falls, the building settles, or any other damage occurs. That is, there is no reason why any contractor on a building who follows the plans and specifications should be held responsible, for it is the business of the architect to proportion and design, and of the contractor to execute. If in the planning of a building the architect makes the columns or foundations too light to support the superstructure, and the building subsequently falls, it is the architect, not the mason, who should be held responsible. In like manner, if the water pipes, say, for a hotel building are too small, so small in fact that guests on the upper floors cannot get water while those on the lower floors are using the plumbing fixtures, it is the architect, not the plumber, who should be held accountable for the failure.

The owner of the building retained the architect to design, proportion, superintend, and see that all work on the building was done right. He employs and pays the contracting plumber to follow the directions of the architect as laid down in the plans and specifications and detail drawings, and so long as the contracting plumber follows the written directions of the architect, together with the plans, specifications and details, he is, or ought to be at least, exempt from any come-back in the form of consequential damages. Of course, in the foregoing illustration the failure of the plumbing work was due to faulty design in not properly proportioning the water mains. But are not all failures of the plumbing system due to faulty design or faulty superintendence? If a pipe is too thin to stand the pressure, that is faulty design, and as such an error of the architects. If the drainage system is not tight, again, is not that as much the fault of the architect's superintendent as of the plumber? Suppose through shrinkage or settlement the pipes or fixtures are damaged or broken; should not the architect have seen that the work was so installed that damage could not result from that cause? It is the architect's place to make provision for expansion, contraction, shrinkage and settlements in his plans and specifications, by calling for the necessary fittings to take care of those movements.

It would seem that the plumber was on the same footing as the carpenter, mason and other contractors on a building; that in the final analysis the architect, and the architect only, would be the one to suffer, and that the plumber would be as immune as the general contractor.

But, there is a difference between the plumbing contractor and the other contractors on a building. There is a difference, which makes the long-suffering plumber the goat, and by taking advantage of his good nature and easy going ways puts him in a position where he is responsible for both the design and construction of the plumbing work, and as such must see that every thing is left letter perfect or suffer the consequences. This difference, which will be treated fully next week, lies in the fact that other contractors on a building follow instructions while the plumber does not. The carpenter, mason, electrician, and all the other contractors have full and complete plans, specifications and details, covering the installment of their work. With them, nothing is left to chance or discretion. With the plumber, on the other hand, he has little or nothing to guide him in the majority of cases but the location of the fixtures marked on the general plans. The manner of installing the work is left entirely to him, and with this discretion goes the responsibility inseparable from design in any line.

Just think the matter over for awhile and you will see that you are put in a different class from the other contractors on a building. This would not be so bad, even though it does carry increased responsibility if the plumbers were paid an additional amount for the risks they run. But as has already been shown, under the sub-contracting evil they are beaten down to the lowest panic prices. Verily, we get it going and coming!

(To be continued next week.)

Institutional Sewage Disposal Plants

Their Design and Construction Fully Described, With Special Reference to Plants at the Infirmary and the Children's Home of Greene County, Ohio

By A. Elliott Kimberly

Consulting Hydraulic and Sanitary Engineer

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In the fall of 1911 there were constructed for the Infirmary and the Children's Home of Greene County, near Xenia, O., sewage purification plants serving ultimately 100 and 75 persons, respectively. As these plants are perhaps typical of those adaptable to the requirements of the smaller institution, a description of them with discussion may be of interest.

The Greene County Infirmary buildings are of some years standing and comprise a main building, a hospital and several barns and sheds. For years the sewage from the institution has been discharged at the head of a gully practically dry in the summer months and the nuisance thus created has been such as to give rise to many complaints and threatened damage suits. These conditions were the primary cause for sewage treatment at the Infirmary. In the spring of 1911 there was begun on a knoll adjacent to that on which the Infirmary is situated, and on the same watershed the construction of a new Children's Home. To prevent the development of conditions similar to those caused by the Infirmary sewage, there was also provided a sewage plant for the new Children's Home.

Fig. 1. View of Sand Filters for Sewage at Greene County, Ohio, Infirmary—Ready for Sodding.

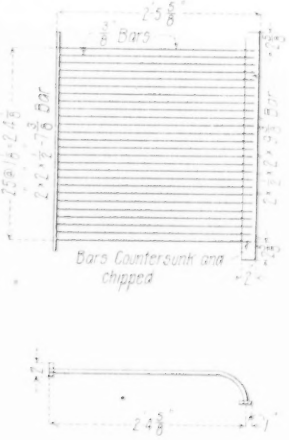


Fig. 6. Details of Sewage Screen.

The two plants are located only a short distance apart, but on account of topographical conditions, they could not satisfactorily be combined.

Features Controlling Type of Plant.

Local conditions demanded only the prevention of nuisance from the sewages of the two institutions as no water supply nor source of water supply was endangered. The problem of design therefore was to provide such devices as would insure a treated sewage stable *per se* under summer temperatures, a result to be effected by a plant possessing permanency, requiring minimum supervision for continued success and capable of construction at the lowest cost commensurate therewith.

Experience with some 25 institutional sewage plants under practical operating conditions has brought out strongly the necessity for simplicity in operation. In the smaller institutions, especially after the novelty of a sewage treatment plant has worn off, the regular institutional employe rarely devotes much attention to the plant's upkeep, unless his salary is increased to correspond with increase in duties. The institutional employe has been engaged for a specific purpose, has been assigned special duties and usually declines to take permanent interest in a sewage plant without increased compensation. It is the duty of engineers to impress upon the executives of institutions that the relatively small expense incidental to caretaker's services is well worth its cost as reflected by the increased efficiency and years of usefulness of the sewage purification plant. In most cases only by intelligent supervision can a plant fulfill the purpose for which it was constructed, and thus justify the approval of the central health authority under whose sanction the plant was built and the expectations of the engineer by whom the plant was designed. It cannot be too strongly emphasized that the mere installation of a sewage purification plant is but a partial step in the actual solution of a sewage nuisance or of a water supply pollution problem.

Since filters constructed of fine grain material for sewage are more effective than other primary filtration procedures in removing organic matters, and since their op-

eration is simple, such plants appear best adapted to the sewage treatment needs of the smaller institution. Moreover, the cost of filtering material, while relatively high in regions where the glacial drift formation is absent, does not usually prevent the use of filters of fine grain because of cost as might be true for large institutions or for small municipal plants

In view of the above considerations, intermittent filters of fine grain material were alone considered for these

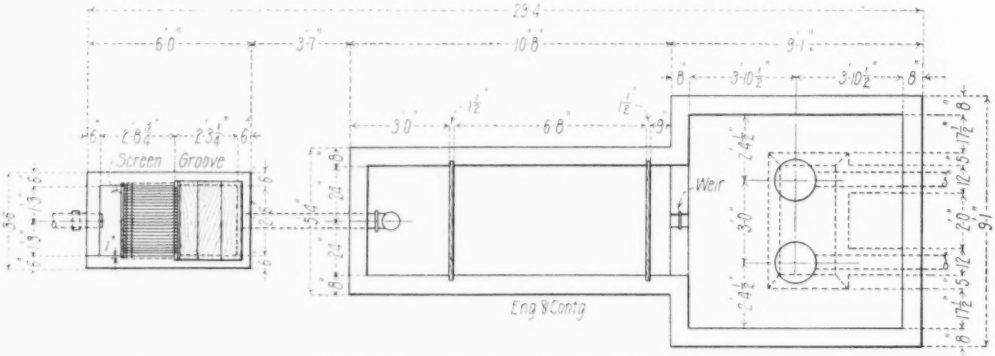


Fig. 2. Plan of Screen Chamber, Settling Tank and Dosing Chamber of Infirmary Plant.

Greene County plants. Fig. 1 is a general view of the Infirmary plant. In broad terms, the plans provide for the interception by a screen of the coarser matters present to an unusual extent in institutional sewage, removal by sedimentation of a part of the suspended matter and oxidation of the dissolved impurities by intermittent sand filters to which the sewage is applied intermittently, automatically and in considerable volume. Since the plants are practically identical in design, a description of the Infirmary plant will suffice for both.

Description of Infirmary Plant.

Sewage from the institution is conducted through a vitrified pipe sewer to a concrete drop manhole, distant about 70 ft. from the main building and in an easterly direction, thence on a 4.4 per cent grade to the screen chamber, distant about 80 ft.

Screen Chamber.—The screen chamber constructed of concrete is 2 ft. 6 ins. x 5 ft. in plan and is ordinarily closed with a hinged oak cover. The screen is built of ⅜-in. steel bars, spaced ⅛ ins. c. to c. set into a ½ x 2-in. steel bar at each end. To prevent rusting, the screen is coated with two coats of asphalt. The upper end of the screen is bent on a 4½-in. radius to fit against a horizontally placed wooden receiving shelf. The screen rests in grooves in the concrete and in the direction of the sewage flow is inclined at an angle of 45°.

Settling Tank.—The screened sewage enters a covered reinforced concrete settling tank 4 ft. x 10 ft. in plan, with a flow line depth of 6 ft. The capacity of the tank is about 1,800 gals., which affords a period of retention of 11 hours at the maximum capacity of the plant. A manhole is provided for entrance to the tank. Sewage enters the tank through a cast iron elbow extending to a point 2 ft. 6 ins. below the flow line, and flows out over a weir plate 6 ins. in length and placed on the center line. Cypress baffle boards are located 3 ft. from the inlet and 9 ins. from the outlet end, and extend 3 ft. 9 ins. below the flow line.

Dosing Tank.—Contiguous to the settling tank is a covered dosing tank 7 ft. 9 ins. square in plan. It is constructed of reinforced concrete. A manhole is placed in the roof to give access to the siphons. The tank is operated by 5-in. alternating siphons, of the Miller type, set to draw 4 ft. With no allowance for inflow, the discharging capacity of the dosing tank is about 1,800 gals. Independent discharge lines of 6-in. vitrified sewer pipe conduct the sewage to an influent chamber whence it is applied to the sand filters. Plans, sections, and details are shown in Figs. 2 to 6 inclusive.

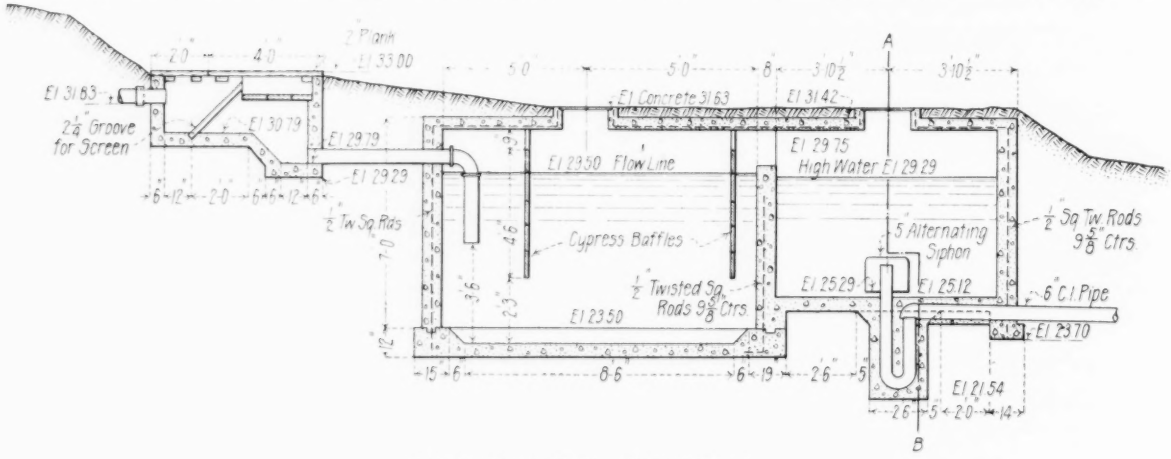


Fig. 3. Sectional Elevation of Fig. 2.

Sand Filters.—The sand filters are each 38 ft. square in

plan. The surface area is 1,444 sq. ft. or 0.033 acre each. They are separated by a concrete wall, the other three sides of each unit being formed by embankments sloping 1½ to 1. The filters contain 3 ft. 6 ins. of sand supported by a graded gravel layer of 6 ins. maximum thickness. The effective size of the sand actually placed in the filters is 0.23 m.m.; the uniformity coefficient 1.8. Each filter is drained by two lines of 4-in. vitrified sewer pipe leading into a main drain 6 ins. in diameter. The lateral drains are laid with open joints and with an open space of about ½ in. between the lengths of pipe. The bottom of the excavation is sloped to each drain and equal areas are tributary to each lateral drain. The details of the inlet chamber are shown in Fig. 7.

The gravel is of four sizes. Each grade has the following size and thickness as indicated by passage or rejection by sieves of the sizes indicated:

Grade.	Passing Sieve.	Rejected Sieve.	Depth (ins.)
1	3 in.	1 in.	2
2	2 in.	½ in.	2½
3	½ in.	¼ in.	1
4	¼ in.	1/16 in.	½

The coarsest gravel fills the underdrain trenches up to the grade of this material at its highest point. The smaller sizes are then placed, feathering to zero thickness as they meet the shaped filter bottom.

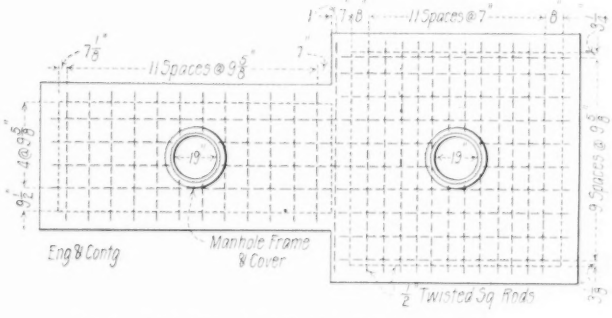


Fig. 4. Roof Plan of Tank and Dosing Chamber.

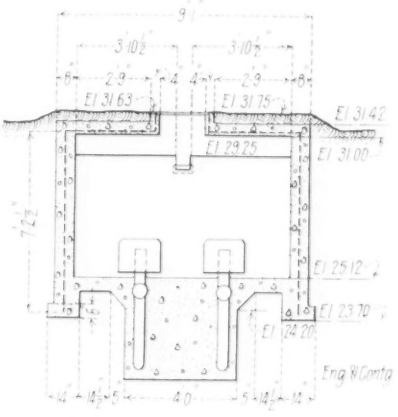


Fig. 5. Section A-B of Fig. 3.

A short distance below the filters, the effluent flows out on to the natural surface of the ground. At the influent chamber, by means of shear gates, the sewage from either siphon discharge line may be diverted to either filter as desired. The sewage reaches the center of each unit through a line of 10-in. channel pipe which leads to a cypress apron 4 ft. square.

Embankments.—After the sanding of the filters was completed, the inside slopes of the embankment were carefully sodded with firm healthy sod. The tops of the embankments and the outside slopes were seeded.

Some Features of Design.

The above plant is designed on the basis of a per capita sewage flow of 40 gals. There is provided a 11-hour period of flow in the settling tank for an ultimate population of 100 persons or a total flow of 4,400 gals. in 24 hours. The dosing tank capacity is based upon a quantity of sewage equivalent to a depth of each filter unit of about 2 ins.

For municipal plants, according to standard practice, sand filters may safely be designed on the basis of 1,200 persons per acre. For the above plants, this figure was increased to 1,500 persons per acre, because in each case the ages of the population served tend to make a per capita organic matter load lower than that in municipal plants. Further, the rate of treatment averages only 40 x 1,500 = 60,000 gals. per acre in 24 hours, a most conservative figure for sand filters which receive clarified sewage.

Special attention was given to the design of a screen that could readily be cleaned and would possess permanency. At most institutions foreign matter, especially clothing and rags, finds its way into the sewers and it is desirable to prevent its entrance into the settling tank. At these Greene County plants, the screens are readily raked onto the receiving shelf whence they are removed and either burned or buried. Screens at institutional sewage plants should be cleaned daily to prevent serious backing up in the sewers, hence arrangements for cleaning and for the removal of the screenings are advantageously made as simple and as easy of operation as possible.

The necessary feature of intermittent operation of sewage sand filters is, of course, well understood. This feature is usually obtained by providing a dosing tank with automatically operated siphons. These devices insure the application of a volume of sewage sufficient to cover practically the entire area of the sand surface. In the writer's experience, the direct flooding of sand filters at institutions (dosing tanks omitted) is not advised because the rate of flow varies within wide limits and at night practically ceases. The directly flooded filter remains in service a given number of hours after which the sewage is diverted to another filter. This feature entails or should entail more or less continual and intelligent supervision, a departure from the original premise regarding simplicity and ease of operation. Further, under practical operating conditions, certain areas of directly flooded units receive excessive loads of organic matter. These areas clog unduly. The rates of filtration are correspondingly increased for the remaining sections of the filter, and the resulting effluent deteriorates, eventually becoming putrescent.

In the Middle West the item of fine grain filtering material is all important as regards the cost of a small sewage plant. The writer's specifications called for a sharp sand practically free from clay, dust and dirt, less than 1 per cent passing a sieve having 200 meshes per linear inch, containing no particles greater than ¼ in. and with an effective size ranging from 0.20 to 0.45 m.m.; uniformity coefficient not greater than 3.5. These size clauses admit of a wide range and permit the use of local bank sand, provided the fine alluvial components of the bank material are absent.

An important feature of design is a provision against

the impairment of the sand filtering material, or any other material, by the washing of soil or clay from the freshly formed embankments. This feature has been strongly emphasized in the writer's experience, and to meet it he provided for the sodding of the inside slopes of the embankments practically as soon as the filters are completely sanded. The embankment tops and outer slopes for reasons of economy are merely seeded. Both of the Greene County plants were protected from embankment wash in the above manner, and this protection against the effect of a copious rain shortly after the filters were sanded fully justified the slight extra expense such sodding entailed. If of good quality, the sod originally on the site of the filters may serve the above purpose, provided it has been wetted occasionally and kept in healthy condition until required for use.

The feature of drainage around a plant will, of course, suggest itself. At Greene County this feature is disposed of by the construction of low levees formed of earth excavated to form the filters.

At each of the above plants the topography admitted of the discharge of the effluent at such a point as to permit of the sampling of the effluent for analysis. When conditions do not admit of this, an effluent manhole or a lamphole is very properly included in the design. Such an arrangement enables the operator of the plant to judge of its efficiency, facilitates the work of centralized supervision on the part of the State and affords the layman an opportunity to determine the near approach of the effluent of the efficient sand filter to the "spring water" ideal.

The sand filter is the most successful of all types of plant for the small institution where there is desired a well-vitrified, stable effluent. In fact, such filters can be considered to advantage even for institutions of from 1,000 to 2,000 population. Of course, the question of cost will largely control for the larger places where the problem really approximates that of the small municipality. Whether the choice be contact filters alone or in combination with sand filters or possibly springing filters, simplicity should be the key note of the design. It is well to emphasize the fact that caretakers are necessary and are important auxiliaries to the sewage plant of the larger institution. Their compensation may range from $15 to $35 per month plus board and lodging depending upon the size of the plant and the required duties.

To assist in the intelligent operation of an institutional plant especially in the event of thorough tests of the plant by a central supervising authority such as the State, it is advisable to provide means for measuring the sewage flow. The larger the institution, the more importance is attached to the rate of flow and in such cases provision should be made for a permanent weir, fully accessible, by which there may be determined, when desired, the actual rate at which the sewage flows to the plant. In the small institution, on the other hand, the rate of flow is of little importance. The actual rate varies within wide limits. The significant factor is the total quantity of sewage in 24 hours. These data may readily be secured with sufficient precision by recording the number of discharges from the dosing tank during the period especially under test.

In the above connection, it may be of interest to present data (see Table I), upon the rate of sewage flow from an institution of about 1,200 population, obtained by the writer in 1906 when in the employ of the Ohio State Board of Health. The data illustrate well the correlation of the rate of sewage flow with the different activities of the institution.

TABLE I.—ILLUSTRATIVE SEWAGE FLOW AT A LARGE INSTITUTION AT DIFFERENT HOURS OF THE DAY AND NIGHT.*

Hour.	Gals. in 24 hrs.	Pct. of avg.	Hour.	Gals. in 24 hrs.	Pct. of avg.
6 a. m.	126,000	217	6 p. m.	43,000	74
7 a. m.	61,000	105	7 p. m.	50,000	86
8 a. m.	91,000	157	8 p. m.	43,000	74
9 a. m.	80,000	138	9 p. m.	61,000	105
10 a. m.	138,000	248	10 p. m.	43,000	74
11 a. m.	70,000	120	11 p. m.	43,000	74
12 a. m.	61,000	105	12 p. m.	43,000	74
1 p. m.	50,000	86	1 a. m.	43,000	74
2 p. m.	50,000	86	2 a. m.	43,000	74
3 p. m.	43,000	74	3 a. m.	43,000	74
4 p. m.	61,000	105	4 a. m.	43,000	74
5 p. m.	70,000	120	5 a. m.	43,000	74

Population 1,150.

The following interesting sewage flow data, Table II, taken from the above cited report* illustrate the differing

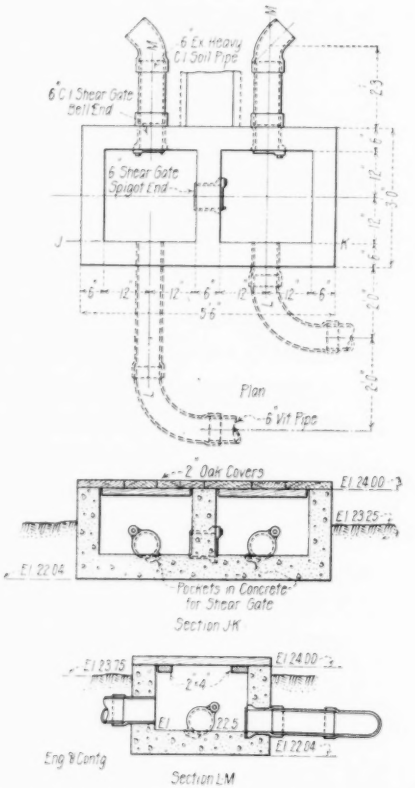


Fig. 7. Details of Inlet Chamber for Sand Filter Beds.

rate of flow for different days of the week. The data were obtained in 1907 at the Ohio State Hospital for epileptics, at Gallipolis, Ohio, population 1,450:

TABLE II.—ILLUSTRATIVE INSTITUTIONAL SEWAGE FLOWS FOR DIFFERENT DAYS OF THE WEEK.†

	Thousands of Gallons in 24 Hours.						
	Sun.	Mon.	Tues.	Wed.	Thurs.	Fri.	Sat.
Maximum	247	207	209	209	211	248	216
Minimum	150	125	143	114	116	142	123
Average	192	170	168	174	171	188	184

The above figures indicate the variations in rate of flow dependent upon the several activities of the institution, particularly the laundry operation and the feature of bath days. In the design of sewage plants for the larger institution, these features come up for consideration in determining the proper sizes of pipes, tanks and dosing ap-

*Lancaster Boys' Industrial School Report, Ohio State Board of Health, 1908, p. 630.

†Period covered March 10 to June 16, 1907.

paratus. The smaller institution similarly shows wide variation in the actual rate of sewage flow, but the total quantity is relatively small and the flow is readily equalized by the tanks and other devices by which the sewage is treated.

Features of Construction.

There are few features of construction worthy of special comment at Greene County. The tanks were built in excavation. The filter embankments were partly in fill, but the bottoms of the filters were wholly in cut. The initial rough excavation was effected by drag scrapers, but when nearing the finished slopes hand labor was employed. It is of great importance for the successful drainage of the plant that careful attention be given to the preparation of the bottoms of the filters. The requisite free drainage can be obtained only by careful supervision of the work of shaping the underdrain slopes and trenches.

It will readily suggest itself that for a small plant the cost of preparing gravel of proper character and of several grades is relatively high. At Greene County it was necessary to prepare the several grades by hand. So much depends upon the free drainage of an intermittent sewage sand filter that the extra care and expense necessary to secure clean gravel of suitably graded sizes appears well worth its cost.

An interesting feature of the construction at Greene County was the filling of a former cistern which was a part of a former storm water drainage plan. This cistern was 11 ft. in diameter and 14.5 ft. deep and as it was embraced by one of the filters it was necessary to fill it. The walls were razed to a point about 1 ft. below the bottom of the filter, after which earth was deposited in 6-in. layers and carefully tamped. No water was available to wet down the fill, but for some weeks prior to the sanding of the filters much rain fell which apparently well compacted the earth deposited into the sump. After the first heavy rain subsequent to the sanding of the filters, however, the sand over the sump fell about 10 ins. The filters were resanded to grade and no further settlement has been observed.

The contract price for the Infirmary plant was $1,500; that of the Children's Home $1,310. The per capita costs were $15 and $17.50, respectively, based on the maximum future population to be served.

S. Milton McKay, C. E., county surveyor, acted as resident engineer, assisted by F. A. Dubois as inspector, with the writer as consulting engineer. The contractors were Huonker & Williams, of Springfield, O.

Rivals.

A dollar and a penny once happened to be together in the same pocket, and the dollar began to put on airs. "I am a big gun," said the dollar, "and you are nobody. I am white and bright, and you are only a dull, mud-colored little Indian. I am religious, for I am all the time saying, 'In God we trust,' and you are only a pagan. I am patriotic, for on one side I have the American eagle and on the other the Goddess of Liberty, and I buy lots of fireworks on the Fourth of July. I am Heavenly-minded, for I have the stars to think about and you don't have anything. I am precious, for I am nice bright silver and everybody wants me; but you are the base copper and nobody cares a snap for you." "That may all be so," said the poor little penny. "You may be more patriotic than I am and more religious than I am, but I go to church more than you do and am oftener found in the contribution box than you are," replied the penny.—"Lyons Republican."

THE ANNUAL CONVENTION OF THE CONNECTICUT MASTER PLUMBERS' ASSOCIATION.

The Connecticut Master Plumbers' Association held its annual convention at the Hotel Taft, in New Haven, Conn., on Wednesday, May 8th, with a good attendance, nearly two hundred delegates and visitors being present.

When the convention opened at 11 o'clock, Mayor Frank J. Rice, of New Haven, made a brief and most appropriate address of welcome to the visitors, after which the convention gave its undivided attention to the business before it.

During the business session several committees, including the memorial committee, reported on the progress of the association during the past year. The memorial committee consisting of W. P. Kirk, of Bridgeport; S. L. Dibble, of New Haven; and James Duffy, of Hartford, reported the deaths of four prominent members of the association during the recent year, Thomas Corbett and F. P. Costanzo of New Haven; George Cope, of Hartford, and Daniel Rock, of Fairfield. Mr. Dibble, of New Haven, read the report.

The auditing committee, J. M. Page, of Naugatuck; A. J. McManus and W. H. Day, of New Haven, reported favorably to the convention, Mr. Page, of Naugatuck, reading the report.

Considerable increase in the membership of the association was noted in the report of the membership committee. The committee, George S. Bull, of Hartford; F. E. Burns, of New Britain, and E. J. Daly, of Waterbury, has been doing some good work during the year just passed and the contents of the report was a welcome one.

Mr. Bull also read the report of the committee on credentials in behalf of the committee: G. S. Bull, of Hartford; James Cook, of Bridgeport, and James F. Duffy, of Hartford.

Following the reading of the reports the officers for the coming year were elected, as follows: President, Fred Booth, of Bridgeport; first vice-president, Charles N. Flagg, jr., of Meriden; second vice-president, E. J. Daly, of Waterbury; recording secretary, R. T. Roch, of Bridgeport; financial secretary, G. S. Bull, of Hartford; treasurer, John Troland, of Norwich; national state vice-president, A. J. McManus, of Hartford; sergeants-at-arms, J. B. Beegan and L. W. Lee, both of New Haven.

Following the election of officers the meeting adjourned to the dining room for the annual banquet, at which Thomas J. Dowling, the retiring president, acted as toastmaster.

Mayor Rice was the first speaker, and he spoke interestingly on various topics of interest to the association. The next speaker was Frank J. Fee, of New York City, vice-president of the National Association of Master Plumbers, who spoke on the work of the national organization. Ex-governor R. S. Woodruff, of New Haven, and Chas. H. Downs, formerly of New Haven, but now of Springfield, Mass., concluded the list of speakers.

Following the reading of a paper by Toastmaster Thomas Dowling the convention adjourned sine die.

Mt. Pleasant, Ia.—George Thomas has been awarded the contract for the plumbing of the new courthouse. The contract amounts to $2,082.

Trenton, N. J.—John A. Dowling has been awarded the contract for the installation of a new plumbing system in the workhouse. The contract amounts to $2,222.

Arrangements Completed for Convention Exhibits

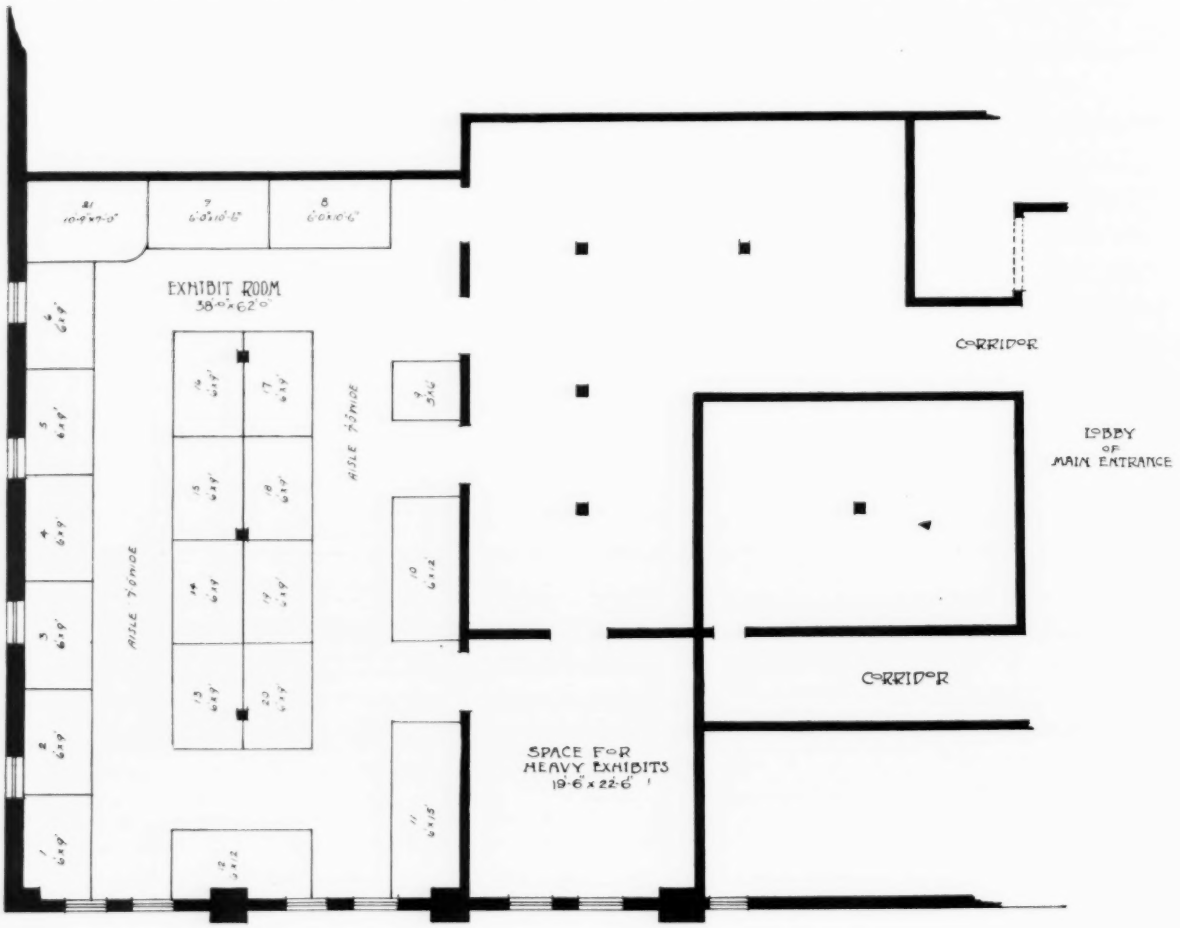
Details of Exhibition Plans Assure Manufacturers That Exhibits Will be an Interesting Feature of the Salt Lake City Convention

The committee on manufacturers' exhibits of the Salt Lake City Master Plumbers' Association, in charge of arrangements for exhibits at the coming annual convention of the Master Plumbers' National Association, has submitted a detailed plan which promises to afford adequate exhibition facilities such as will make the exhibits one of the interesting features of the convention. It is apparent from early reports that the efforts of the Salt Lake City committee are meeting with decided success.

A most attractive and desirable exhibit room, plan of which is printed on this page, is situated one block from the headquarters hotel, and one-half a city block from Barrett Hall where the sessions of the convention are to be held. The entrance to the exhibit hall is in plain view of the convention hall entrance, a large lawn separating the two. The exhibit room is 30 x 60 ft. dimensions, and is well lighted and ventilated and, on account of its close proximity to the convention hall, is particularly desirable. In addition to the space shown in the detailed plan, the committee has secured several rooms adjoining the main exhibit room, which can be used for display purposes, rest or reading rooms.

The plan will afford manufacturers of plumbing and heating specialties an opportunity to exhibit their products in a very desirable manner to the members of the National Association who attend the convention.

It is now a recognized fact that the forthcoming convention will be the largest in the history of the Master Plumbers' National Association, and the fact that this means the bringing together of the leading men in the trades is a point that is attracting unsurpassed interest. It is the intention of the Salt Lake City committee to make the exhibits an attractive feature of the convention, and in order to give exhibitors every best advantage, the



PLAN OF EXHIBIT ROOM
NATIONAL ASSOCIATION OF MASTER PLUMBERS
SALT LAKE CITY, UTAH
Scale of Plan 1/8"=1'0"

names of the firms exhibiting will be posted in the convention hall and all delegates will be urged to visit the exhibit hall. Mr. Will Rees, president of the Salt Lake City Master Plumbers' Association, is in active charge of the manufacturers' exhibit committee.

A JOLT TO THE GENERAL CONTRACTOR.

At a recent meeting of the Master Plumbers' Association of Racine, Wis., that organization took the initiative in adopting a resolution calling for the absolute elimination of the relationship between the master plumber and the general contractor. In adopting this resolution, the master plumbers of Racine are of the opinion that they have brought about a desirable conclusion to an existing condition in the plumbing trades in their city, such as is conveyed by the idea of the cartoon printed on this page. By this action they also hope to establish and complete one of the most ideal local associations of master plumbers in existence.

The evils of sub-contracting, as have been presented in the trade press from time to time, called forth action in different ways from different master plumbers' organizations. Several state laws have recently been passed and others are contemplated as a result of the aggressiveness of the master plumber organizations in the matter of the contracting for plumbing and heating work on public institutions. The state law recently passed by the legislature of New York is one of the initial examples of the elimination of the general contractor, and the fact that this will work to the advantage of the plumbing industry is obvious.

The concerted action of the master plumbers of Racine, Wis., in the adoption of the resolution referred to, is broader in scope than any former attempted solution of the sub-contracting problem.

"Beware of the Basket."

VALUE OF AN ASSOCIATION DEMONSTRATED IN THE WORK OF CALIFORNIA MASTER PLUMBERS.

The State Association of Master Plumbers of California has recently become active in a campaign to secure the establishment of public comfort stations and the installation of sanitary public drinking fountains and other sanitary necessities in every city of the Golden state. The executive board of that organization, including Frank J. Klimm, president; Edward W. Crowell, vice-president; Wm. F. Wilson, treasurer; Thos. Haverty, Wm. Rowe, Chas. H. Julian, and John Cahill, trustees, and John L. E. Firmin, secretary, is presenting to every municipality in the state of California, the matter of the importance of adequate sanitary appliances, and particularly the desirability of the establishment of public comfort stations. In a recent communication signed by the State Association of Master Plumbers of California, by its executive board, addressed to the mayors of every large city in the United States, it was stated: "This is most respectfully addressed in the belief that you realize that public conveniences, or comfort stations, and sanitary public drinking

fountains, are sanatory and sanitary necessities; that they exert a powerful influence in the advancement of morality; and that the necessity for these public utilities is proportionate to the density of the population of a community.

"The California Master Plumbers' Association is carrying out a campaign for the purpose of bringing this important subject to the attention of municipal and other authorities throughout the United States, and desires to learn what has been done in your city, and what is in contemplation relative to public convenience stations and drinking fountains."

To this communication to the mayors to whom it was addressed was attached a blank form of questions with provisions for answers, which covers every phase of the subject of public convenience stations and drinking fountains. By possessing this data, the state association of California will be able to "show the way" of modern and progressive sanitation in every city of the United States to the municipalities of a state which is favored with an aggressive and progressive association of master plumbers. This action on the part of the Calfornia association is one of interest to the whole plumbing industry.

ACTIVE ORGANIZATION WORK AMONG MINNESOTA MASTER PLUMBERS.

The officers of the Minnesota State Association of Master Plumbers are making a great effort to induce the master plumbers throughout the state to interest themselves in the work of the association. Thus far, they have sent out over one thousand personal letters and have held meetings in Duluth and Mankato. The Duluth meeting was a particularly interesting one and was very encouraging to the new officers, as it resulted in every master plumber in Duluth becoming a member of the State and National associations.

The meeting at Mankato was attended by a number of the master plumbers from various points throughout the southern part of the state, all of whom expressed themselves as being strongly in favor of an association, and they all promised to get busy without delay and assist the state officers in bringing their neighbors into line. It is this spirit which makes a good association, for the individual members must be made to realize that the officers cannot alone and unaided make a successful organization. A good association is the result of the combined work of the entire membership.

Other meetings will be held at various points in the State in the very near future, such as Winona, Stillwater, and Brainerd, with other locations to be decided upon later. To all of these meetings, the officers are inviting all master plumbers who are easily accessible to the place of meeting. Notices are sent by mail to all master plumbers on the association's list, but if there is any one who reads this and who is not on the mailing list of the State Association, he will be placed there just as soon as he will notify the officers. Do not hesitate to write; your letter will be gladly received, and promptly answered.

A committee has been appointed to arrange for a picnic to be held the latter part of June at some summer resort close to the Twin Cities. This will be a combined mid-summer convention and picnic and an invitation is extended to every master plumber in the State to attend. Notice of the date and the place will be sent to every master plumber in the State just as soon as the committee makes its selection.

Minnesota master plumbers who are not in touch with the work of the State Association, should get in the game at once by writing a letter, telephoning, or calling in person upon the President of the State Association, W. W. Hughes, 1514 E. Franklin Avenue, Minneapolis, Minn. Mr. Hughes writes that his "latch string is always out."

CONVENTION DATES.

June 4, 5 and 6, 1912.—The seventh annual meeting of the American Society of Inspectors of Plumbing and Sanitary Engineers, in St. Louis, Mo. Headquarters will be established at the Planters Hotel. The officers of the society are: President, Martin Conroy, St. Paul, Minn.; first vice-president, John Hefferman, Houston, Tex., second vice-president, Lawrence J. Lawler, Pittsburgh, Pa.; secretary and treasurer, Thos. J. Claffy, City Hall, Chicago.

June 10-13, 1912.—The twenty-fourth annual convention of the National Association of Master Steam and Hot Water Fitters, at Atlantic City, N. J. Headquarters will be established at the St. Charles Hotel. The officers of the association are: President, Edward B. Denny, Newark, N. J.; vice-president, John T. Bradley, St. Louis, Mo.; treasurer, Juan A. Amirall, New York City; secretary, Henry B. Gambers, New York City; sergeant-at-arms, John C. F. Trachsel, Philadelphia.

June 11 and 12, 1912.—Quarterly meeting of the Nation Association of Brass Manufacturers, in Detroit, Mich. Headquarters will be at the Hotel Pontchartrain. The association's commissioner is Wm. M. Webster, City Hall Square Bldg., Chicago.

June 25, 26 and 27, 1912.—The fourth annual meeting of the National District Heating Association, in Detroit, Mich. The officers of the association are: President, A. D. Spencer, Detroit, Mich.; first vice-president, Warren Partridge, Springfield, Ill.; second vice-president, R. D. de Wolf, Rochester, N. Y.; third vice-president, Cadwallder Evans, jr., Pittsburgh, Pa.; secretary-treasurer, D. L. Gaskill, Greenville, O.

July 11 and 12, 1912.—The summer meeting of the American Society of Heating and Ventilating Engineers, in Detroit, Mich. The officers of the society are: President, Professor John R. Allen, Ann Arbor, Mich., vice-president, John F. Hale, Camden, N. J.; second vice-president, E. T. Capron, Chicago; treasurer, Jas. A. Donnelly, Brooklyn; secretary, W. W. Macon, 29 West 39th Street, New York City.

July 12 and 13, 1912.—The Colorado Master Plumbers' Association will hold its convention in Cheyenne, Wyo. This association includes master plumbers of Colorado, New Mexico, Wyoming and Utah. The president of the association is Chris. Irving, 1525 Larimer St., Denver, Colo.

July 16, 17 and 18, 1912.—The 30th annual convention of the National Association of Master Plumbers, in Salt Lake City, Utah. The officers of the association are: President, Alfred C. Eynon, Canton, O.; vice-president, Frank J. Fee, New York City; secretary, Louis E. Deuble, 312 N. Market St., Canton, O.; treasurer, William McCoach, Philadelphia.

THE METAL MARKET

A MIXED SITUATION IN PIG IRON.

The steel trade is more active than perhaps ever before. All kinds of steel are in unusual demand. The railroads are buying freely rails, cars, track fastenings, brick materials and reinforcing rods. In the lighter lines of steel plate the demand is almost phenomenal. Coupled with this the foundry pig iron market is practically at a standstill. No more iron is being made now than last October in the foundry field, while the steel production has increased fully 50 per cent. The cause of this is easily traced, being assignable to the high cost of steel, the scarcity of coke and the low manufacturing profits of foundry pig iron. Should the steel trade continue as started, there is no doubt that prices of foundry iron must advance from $1 to $2 per ton. In the Connellsville coke region there is a continual cry of the scarcity of labor, despite the fact that wages have recently been increased. In the New York market the inquiries for foundry iron only aggregate a few thousand tons and consumers seem to have no anxiety regarding the future. It would not be at all surprising if there were a huge scarcity of foundry iron during the summer.

Quotations are as follows:

Northern Foundry, No. 1, New York	$15.25 to $15.50
Northern Foundry, No. 2, New York	15.00 to 15.25
Northern Foundry, No. 2 plain, New York	14.75 to 15.00
Northern Foundry, No. 2, Chicago	15.35 to 15.60
Southern Foundry, No. 2, Cincinnati	14.25 to 14.50
Southern Foundry, No. 2, Birmingham	10.75 to 11.25

HIGHER PRICES FOR COPPER.

Figures of the Copper Producers' Association were satisfactory to holders of metal and although consumers did not come into the market for a few days they greatly realized that the copper market was not as soft as it seemed to be, for prices advanced to 16⅛ cents later in the week. Consumers in Europe are taking a normal quantity of metal and consumers in the United States are buying far more than usual. With the new production which has come on to the market it has been difficult for some to see where the copper has gone to. It must be remembered, however, that in the electrolytic treatment of copper there is a vast amount of metal locked up in the process of manufacture. The electrolytic refining works have recently increased their capacity and this means the permanent locking up of a considerable quantity of metal. While this will only have its effect in one or two months, it must be admitted that when the situation is adherently so strong that such a little amount of copper has so great an effect it argues well for the stability of prices around these levels.

TIN.

Sales of tin are being made at higher prices and 47 cents has been paid for wholesale lots. The advance in tin has not been as rapid as was expected, still it has held its own stubbornly and with an advance every week or so is slowly moving toward the 50 cent level. Some profess to believe that the tin trade has taken a somewhat different course in the last few years. Formerly most of the tin used was in the manufacture of tin plate, and previous to that in cooking utensils and household dishes. Now there is a vast amount of tin going into small articles such as containers for proprietary preparation, wrappers for candy, etc. Each individual amount is small, but multiplied a million times as is the case it means in the aggregate that a large quantity of tin is going into this form of consumption.

LEAD.

Market is steady and firm, the American Smelting & Refining Co. continuing to quote shipment lead at 4.20c. Independent sellers are shaving the market somewhat and are accepting business at 4.15c.

SPELTER.

Prime Western brands are now held at 7c New York, and there is practically no metal obtainable at less than this figure.

OLD IRON.

The market is somewhat easier, the principal sellers having satisfied their requirements for the time being. Quotations are as follows:

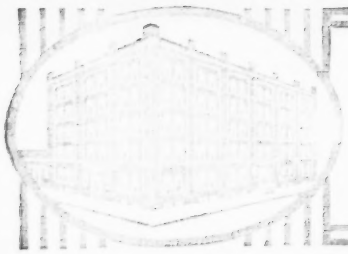
No. 1 yard wrought, long	$11.50 to $12.00
No. 1 yard wrought, short	11.00 to 11.50
No. 1 heavy-melting steel scrap	11.00 to 11.50
No. 1 railroad wrought	13.00 to 13.50
Machinery cast, broken up	11.00 to 11.50
Pipes and flues	10.75 to 11.00
Cast borings	6.50 to 7.00
Stove plate	8.25 to 8.75
Grate bars	7.25 to 7.75
Machine shop turnings	8.00 to 8.50

THE OLD METAL MARKET.

Dealers' buying prices in New York are as follows:

Strictly crucible copper	$14.00 to $14.25
Uncrucibled copper wire	13.25 to 13.75
Light copper	12.25 to 12.50
No. 1 machine comp	11.25 to 11.50
No. 1 brass turnings	8.00 to 8.25
New brass clippings	9.50 to 9.75
No. 1 comp. turnings	10.50 to 11.00
Cocks and faucets	9.50 to 9.87½
Clean red car boxes	10.50 to 10.75
Heavy brass	8.50 to 8.75
Light brass	7.00 to 7.25
Heavy lead	3.80 to 3.90
Tea lead	3.50 to 3.60
No. 1 pewter	31.50 to 32.00
No. 2 pewter	8.00 to 10.00
Close cut solder joints	8.25 to 8.50
Block tin pipe	41.00 to 42.00

Atlantic City, N. J.—The Gibson Co., of 10 South Missouri Avenue, reports a very busy season. Among the many contracts which this energetic concern has recently secured, are the following: Plumbing and heating Berry Knittel's residence, $1,000; H. J. Steven's residence, $1,050; Emily Calef's Bungalow, $790; residence for Amsterdam Construction Co., $1,114; R. A. Johnson's apartment house, $3,989; St. Michaelis Catholic church, $4,200; plumbing two houses for N. Gubrensky, $2,838; heating Dr. A. D. Cuskaden's apartment, $1,199.66; plumbing Brown's Cottage, $1,100.



News of Interest Among the Wholesalers and Manufacturers

THE BROCK WRENCH CO. IN NEW QUARTERS.

The Brock Wrench Co., of New York City, has moved from 18 Dey street to 38 Vesey street, where it has secured increased space and better working facilities for handling its constantly growing business.

HONEYWELL HEATING SPECIALTY CO. OPENS NEW YORK OFFICE.

The Honeywell Heating Specialty Co., of Wabash, Ind., has just opened a new branch office in the Herald Square Bldg., New York City. The new office is in charge of the company's eastern manager, F. T. Rawley.

WILL DO BUSINESS UNDER A SHORTER NAME.

The Bangor Slate Manufacturing & Supply Co., of Bangor, Pa., has just issued a notice to its trade to the effect that it has shortened its name to a considerable extent and that it will hereafter do business under the name of the Bangor Slate Mfg. Co.

WILL MANUFACTURE PLUMBING SPECIALTIES.

The Export Sanitary Manufacturing Co., 257 Broadway, New York City, has been incorporated with a capital of $3,000 to manufacture plumbing specialties. The incorporators are: G. Murray Hurlbert, William J. Lewis and Charles E. Ramirez, all of New York City.

QUARTERLY MEETING OF THE NATIONAL ASSOCIATION OF BRASS MANUFACTURERS.

The National Association of Brass Manufacturers will hold its next quarterly meeting at the Hotel Pontchartrain, Detroit, Mich., on Tuesday and Wednesday, June 11th and 12th, at which matters of vital interest to manufacturers and the trade in general will be considered. Wm. M. Webster, the commissioner of this association, who for many years has been located in the Schiller Building, is now at home to his many friends in the trade in his new and modern offices on the 18th floor in the New City Hall Square Bldg., Chicago.

HEADQUARTERS ANNOUNCED FOR THE CONVENTION OF THE A. S. I. P. & S. E.

The headquarters for the sixth annual meeting of the American Society of Inspectors of Plumbing and Sanitary Engineers will be established at the Planters Hotel, St. Louis, Mo. The convention will be held Tuesday, Wednesday and Thursday, June 4th, 5th and 6th, as previously announced in these columns. Display space will be provided in the parlors of the Planters Hotel, and arrangement for space can be made by communicating with Edward Quinn, care Monument Plumbing Supply Co., St. Louis, Mo.

PERSONAL MENTION.

William T. Isaac, vice-president and manager of the Gurney Heater Manufacturing Co., Boston, Mass., passed through Chicago this week. Mr. Isaac announced that his company's new plant at South Framingham, Mass., is now completed and in full operation, and he spoke optimistically concerning the outlook for a good business season for his company's products.

* * *

J. J. Horigan, president of the Horigan Supply Co., St. Joseph, Mo., was recently in Chicago in the interests of his concern. Mr. Horigan stated his pleasure at the recent encouraging developments in the plumbing and heating trades.

* * *

Geo. P. Stannard, sales manager of the Burlington Brass Works, Burlington, Wis., is making an extensive tour of the east and south. Mr. Stannard is investigating trade conditions and promoting the work of the sales department for the products of the Burlington Brass Works, on this trip.

* * *

The Miller-Hubbard Mfg. Co., of Sturgis, Mich., announce that George Menhennich has been appointed general superintendent of the manufacturing department of their business. Mr. Menhennich has for many years been identified with the furniture manufacturing business and comes to the Miller-Hubbard Co. with an enviable record for the adaptation of advanced factory methods.

* * *

Geo. H. Laib, of Laib Co., dealers in plumbing supplies, at Louisville, Ky., has accepted the office of vice-president of the Transit Motor Car Co. of that city. The Transit Motor Car Co. is a rapidly developing corporation engaged in the manufacture of the "Transit" motor truck. Mr. Laib's connection with this new concern is looked upon with interest by his many friends in the plumbing trades.

* * *

H. J. Wilkins, sales manager of the Logansport Radiator & Equipment Co., Logansport, Ind., was in Chicago this week in the interests of his concern. While in Chicago Mr. Wilkins gave out information to the effect that the Logansport Radiator & Equipment Co. are making extensive improvements in their plant for the increasing of their manufacturing facilities. He also stated that these improvements included the building of a large warehouse. This was reported to indicate the satisfactory progress in the development of the Logansport Radiator

& Equipment Co. in its relation to the plumbing and heating trades.

* * *

Boswell M. Ousterhout, of the W. B. Young Supply Co., of Kansas City, Mo., was a recent visitor in Chicago, and at that time informed "Domestic Engineering" that his concern has had a very successful and encouraging business during the past six months. It is noted with interest that men representing the jobbing interests throughout the western section are very much encouraged with the outlook for future business.

* * *

Adam Cole, known to his many friends in the trade as "King Cole," has accepted a position as traveling representative for the Buckeye Pump & Mfg. Co., of Columbus, O. Mr. Cole entered upon his new duties on May 15th. He is a pump and water-lift expert and the Buckeye company is to be congratulated upon securing his services. He will cover western territory, which is his old stamping ground.

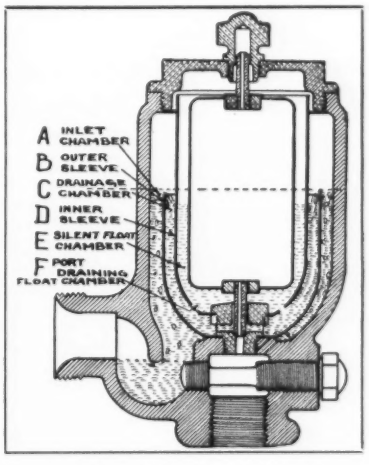
THE "AUTO-SILENT" AUTOMATIC CLOSET COMBINATION.

The C. T. Ham Mfg. Co., of Rochester, N. Y., are manufacturers of the Auto-silent automatic water closets, and these products are of exceptional interest to the plumbing trade. Successful installations of these first class water closet combinations have been made in many buildings during the past few years and the demand is rapidly increasing. The Auto-silent automatic water closet and its special points of interest to the plumbing trade, are cited in the fact that it saves two gallons of water every time operated. Its simplicity of construction and economy in space occupied, are set forth as special features. These closets are equipped with Never-split seats and the fittings are extra heavy red brass, full polished and nickeled. Bowls are absolutely vitreous china, and the invisible tanks are made so heavy that they are almost indestructible. These are the points of superiority noted by the C. T. Ham Mfg. Co. in presenting this product for the consideration of the plumbing trade. Illustrations of the Auto-silent automatic water closet will appear in a subsequent issue of "Domestic Engineering."

General Offices and Factory of C. T. Ham Mfg. Co., Rochester, N. Y.

MONASH-YOUNKER CO. ISSUE INTERESTING CATALOGUE.

The advantages of the Monash noiseless system of vacuum heating, and much other information of direct interest to heating contractors, is set forth in the new catalogue of the Monash-Younker Co., of Chicago. There is contained in this catalogue "Straight talk for consideration on steam heating systems" by Oscar W. Bond, mechanical patent expert, Chicago. All of the different types of the Noiseless Radifier and the Monash Radifier Valve are illustrated and described in a comprehensive manner. The sectional view of the Monash radifier shown herewith shows how two principal objections of the float type of valve for vacuum heating systems have been overcome. Construction of the Monash noiseless radifier, with it individual chambers having individual functions are disclosed in the illustration. It is declared that this valve is the last word in valve construction for vacuum heating systems. In the Monash radifier the float and drainage chambers are separate each performing its individual function independently. In the drainage chamber, C, drainage into the return is direct, rapid and absolute. In the silent chamber, E, the body of water is always still, with a slight and gradual lowering of the line of flotation, thereby insuring silence in the action of the motor float. The separate drainage chamber, C, insures direct discharge of oil, core-sand and dirt into the return pipe, not permitting it to enter into the silent float chamber, E. The water of condensation, then, enters the inlet chamber, A, over the outer sleeve, B, into the drainage chamber, C, and through the ports, F, in the bottom of the inner sleeve, D, passing thence into the silent float chamber, E. In operation, when the water in the silent float chamber, E, is at the line of flotation, the float rises and the valve opens, emptying the drainage chamber, C. With the outrush of water from the drainage chamber, C, the level of the water in the silent float chamber, E, is gradually lowered by the escape of a little water through the ports, F, when the float sinks, closing the valve. Provision is made for the continuous removal of air through the float.



The Monash Radifier Valve.

The American Heating & Construction Co., with a capital stock of $200,000 has been incorporated in Los Angeles by H. H. Mumford, S. L. Edmonds, J. C. McInhirff, R. F. Geardt and A. Glass.

BLAKE SPECIALTY CO. MAKE LARGE SHIPMENT.

The Blake Specialty Co., of Rock Island, recently shipped its first carload of plumbing supplies to San Francisco, and the departure of the car was made the occasion for a celebration. It marked the arrival of a new epoch for the Blake Specialty Co. The workmen employed in the plant were called together and the photograph reproduced on this page was taken. Records of the company have a tendency to show that it will not be long before carload shipments will be a regular occurrence. In fact the company now has orders on its books for two more such shipments to the Pacific Coast, one to Seattle and the other to Los Angeles. The factory of the company is now operated to full capacity in order to meet the increasing demand for their products. When the new factory of the Blake Co. was erected, the officials felt that they were building on a scale sufficient to care for all needs for some time to come. A foresight of the company advantageously provided for construction of the manufacturing establishment in a way that would afford increased facilities without remodeling the building. The capitalization of the Blake Specialty Co. was recently increased and the stock issued is being disposed of. This has provided for the increased capital necessary for the conducting of business and the necessary building improvements and extensions recently completed. The officers of the Blake Specialty Co. are John T. Shields, president; J. D. Blake, vice-president; C. Buckley, treasurer; E. L. Schilinger, secretary, and J. J. Croft, superintendent.

First Carload of Plumbing Specialties Shipped to San Francisco by the Blake Specialty Co., of Rock Island, Ill.

NEW YORK CHAPTER OF THE AMERICAN SOCIETY OF HEATING AND VENTILATING ENGINEERS.

The New York Chapter of the American Society of Heating and Ventilating Engineers held its first annual dinner at Keen's Chop House, 70 W. 36th St., New York, Tuesday, May 14th, at 7 o'clock in the evening.

Before introducing the speaker of the evening, Mr. Mackay asked the members to sing a song written especially for the occasion with special reference to the New York Chapter. He then introduced Wm. J. Baldwin, dean of the heating profession, who spoke at some length on steam fitting and ventilation forty years ago.

President Mackay then introduced D. D. Kimball, who spoke on ventilation with especial reference to the architect.

The next speaker was H. J. Barron, who spoke on "As I See Things Today."

He was followed by J. A. Donnelly, who spoke on "The Needs of the New York Chapter."

Frank K. Chew spoke on "Conservation of Energy and Concentration."

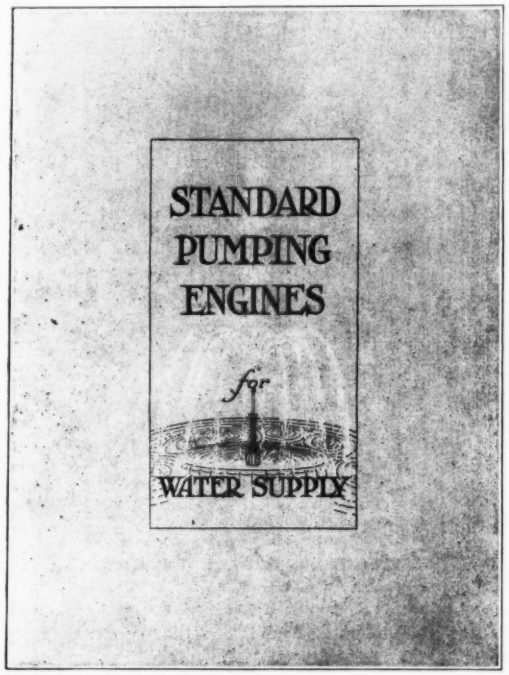
The guests were then entertained by Jack Armour and Frank Corbett.

Among those present were, W. M. Mackay, Wm. J. Baldwin, Frank T. Chapman, H. J. Barron, J. A. Donnelly, D. D. Kimball, F. G. McCann, Joseph Graham, F. K. Chew, Conway Kiewitz, Arthur Ritter, Thos. Barwick, Wm. J. Baldwin, jr., W. G. R. Braemer, R. B. Hunt, A. S. Armagnac, Geo. O'Hanlon, J. P. Lisk, Geo. D. Farnham, E. J. Treat, P. A. Hoffman, Jack Armour,

Chas. E. Warsop, A. B. Marshall, Jas. A. Swann, Homer Addams, Frank Corbett, John E. Miller, H. G. Issertell, W. G. Le Compte, F. A. Wilson, E. A. Scott, Geo. G. Schmidt, Chas. N. Beard, F. K. Davis, W. H. Driscoll, Henry Belmont and Geo. Bergen.

STANDARD PUMP & ENGINE CO. ISSUES NEW CATALOGUE.

The Standard Pump & Engine Co., of 520 Prospect Avenue, N. W., Cleveland, O., has issued a new catalogue which will present to the plumbing and heating trades a comprehensive understanding of the merits of the products of that company. This catalogue and the products set forth therein are presented for consideration on a quality basis. The foreword says in part: "Reviewing our past years of success we feel justified in our confidence that there are a great many purchasers with whom the matter of quality is the first consideration, and we therefore do not base our solicitation upon the matter of price, nor upon the representation that we have discovered some new and heretofore unthought of method which



Front Cover Design of the Standard Pump & Engine Co's. New Catalogue.

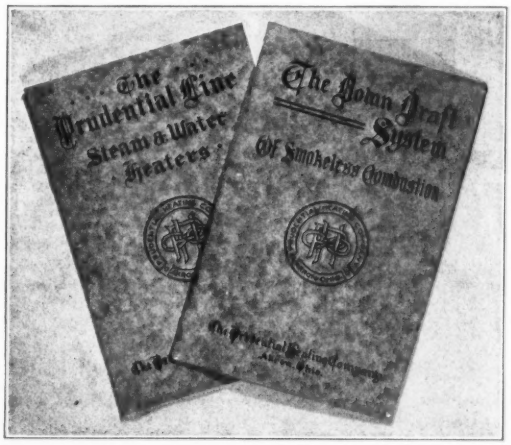
will revolutionize the age-long problem of handling water. We believe that in the following pages is offered a final solution to the problem of water supply, and one which will enable our customers to avoid the continued expense and annoyance of experimenting with various inefficient and unreliable contrivances for handling a problem, the nature of which demands reliability as the first consideration."

This new catalogue of the Standard Pump & Engine Co., the cover of which is reproduced herewith in facsimile, is of merit in every particular, artistically printed and bound, and will prove of interest to the trade.

The Allison Co. has been granted a franchise for laying and operating steam pipes through the streets of Bakersfield, Cal.

PRUDENTIAL HEATING CO. ISSUES NEW CATALOGUE.

The Prudential Heating Co., of Akron, O., is mailing to the trade two books, the covers of which are reproduced in this column. The first of these books contains an elaborate description of the down draft system of smokeless combustion, as brought about by the Cripps combination down draft steam and water heaters. This

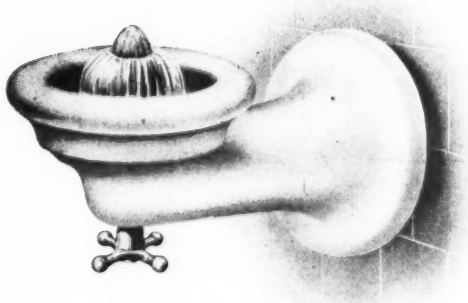


The Prudential Heating Co's. Two New Catalogues.

catalogue also contains a comprehensive article on "Chimneys vs. Combustion." The second book is a comprehensive catalogue of the Prudential line of steam and water heaters and comprises a complete catalogue of the products of the Prudential Heating Co. These products are appropriately described and illustrated.

MODERN SANITARY DRINKING FOUNTAINS IN BIG DEMAND.

The Watrous Co., of Chicago, are experiencing an extensive demand for their products in the modern sanitary drinking fountain line. One of the popular products of the Watrous Co. is illustrated in this column. This is said to

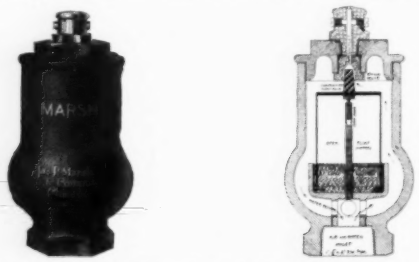


A New "Watrous" Drinking Fountain.

be a fixture so designed as to make it applicable to conditions requiring something of both a substantial and ornamental nature, and it offers special merits both in uniqueness of design and adaptability.

THE MARSH WATER PIPE LINE RELIEF AIR VALVE.

James P. Marsh & Co., of Chicago, manufacturers of the Marsh water pipe line and relief air valve for water mains, tanks and reserviors and high or low pressure pipe lines, are circularizing the heating trades extensively with presentations of the desirability and efficiency of

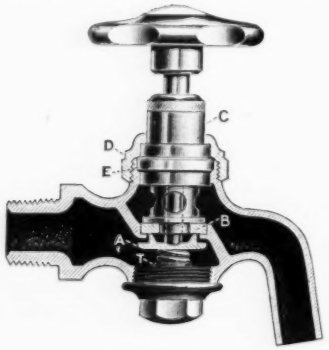


Exterior and Sectional View of the Marsh Water Pipe Line Relief Air Valve.

their valves. In presenting the merits of the Marsh valve, the manufacturers set forth the fact that it is self-cleaning, purifying the water in dead ends and that stagnated water is easily bubbled and purified. This valve, and a sectional view showing its mechanical construction and its operating method and design, is shown by illustrations herewith. In the operations of this valve, the water and air from the pipe line enters at the bottom inlet, passing upward around the outside of the float. The air escapes through the outlet at top until water has reached maximum height, which, raising the float, brings the steam valve to its seat and prevents the escape of water. Thus the valve will remain closed until the level of the water falls below the reservior, then the float drops and the air is allowed to escape.

BASHLIN VALVE MEETING WITH FAVOR.

The Bashlin Company, of Warren, Pa., after a long course of study and experiment, have made improvements in faucets by applying the distinguishing features of the Bashlin valves to Bashlin faucets, viz.: the repairing under water pressure and the renewing of seat rings and



A New "Bashlin" Faucet.

discs, so that after long use, when, in ordinary cases, a new faucet would be required, the Bashlin faucet can be made as good as new by putting in a new seat ring. And the seat ring may be changed while the faucet is under pressure, avoiding the always troublesome and often difficult job of cutting off water at the stop cock in basement, subway or yard.

The claims for superiority made by the Bashlin Co. which they say have produced the popularity of Bashlin faucets in the trade, are set forth in the fact that the Bashlin faucet can be repaired while under full pressure; that excessive force applied in closing the Bashlin faucet cannot injure the rubber seat ring nor any other part; that destructive action of grit is prevented by packing the water away from the screw threads of the stem; that the intense water hammering always so objectionable is reduced to a minimum by special devices in the Bashlin faucet.

A NEW WATER SYSTEM HANGER.

The Leader Iron Works, Decatur, Ill., and Owego, N. Y., are mailing to dealers who handle their line of water systems, a most attractive store hanger in four colors.

This hanger is out of the ordinary class of such advertising, being made up of two sheets, the upper and shorter one bringing out in perfect workmanship a handsome

An Attractive and Effective Wall Hanger.

country estate. This will appeal to every home owner who sees it, and the possibilities that a water system furnish will not be lost sight of. The lower and longer sheet is made most practical by showing in the form of a border and in colors sixteen of the most popular types of water systems and gasoline storage outfits made by this company.

The dealer whose wall is adorned by this work of art, can direct his customer's attention to the uses of such a plant, and by a comprehensive glance he can suggest the most practical outfit from among this showing, at the same time giving the buyer an opportunity to see what else is available.

The hanger occupies a space of fifteen by twenty-one inches and is one of the most business-like methods of co-operating with the dealer to secure business yet devised by this enterprising firm. Those dealers who are not on this company's mailing list, should write the Leader Iron Works, Decatur, Ill., or Owego, N. Y., mentioning "Domestic Engineering," and ask them for a copy of the hanger.

News of the Plumbing and Heating Contractors

Reports of the Week from Many Different Cities Show Both Business and Personal Activity in the Trade

NEWS FROM NEW ENGLAND.

Massachusetts.

Worcester.—The master plumbers have reached an agreement with the journeymen whereby the strike which started May 1 has been settled. The terms of the settlement are not made public, however.

Conway.—I. H. Riggs, of Ashfield, has bought the plumbing and tinning business of R. G. Rice.

Mansfield.—W. C. Fuller Co. has been given the contract for heating and plumbing in connection with the alteration of the town house.

Somerville.—It is estimated that the changes in the heating system at the high school building, made necessary by the proposed addition to the building, will cost the city $20,000.

Wakefield.—A successor to Greenleaf S. Tukey, deceased, as inspector of plumbing is sought by the town of Wakefield. The selectmen have applied to the state civil service commission for a list of names of eligible men for the position. Mr. Tukey at the time of his death had been plumbing inspector for the towns of Wakefield and Reading for 17 years.

Springfield.—A. M. Granger, of 66 Foster Street, has had installed in his house the first electric hot water radiator to come to this city. The radiator is made by the General Fire Extinguisher Co., of Providence, R. I., with which concern Mr. Granger is connected, and was perfected within the last year.

Melrose.—Albert B. Franklin, of Boston and Melrose, has the contract for heating and ventilating the new $80,000 Memorial Building that is being erected on Main street. The foundations of the building are now being laid.

Connecticut.

New Canaan.—George J. Rabbett has been reappointed as inspector of plumbing. The matter of compensation is still under consideration.

Waterbury.—F. W. Engert & Son are installing the plumbing in Saverio Manganaro's new house on Division street.

Bridgeport.—Contractor George Nordling has taken out a permit to erect a two family house for himself on Howard avenue and has placed the contract for plumbing and heating with Carlson & Benson. Carlson & Benson also have in hand contracts for plumbing in a 12-family house on East Avenue for Andrea Merril, and plumbing and heating of three houses on Howard Avenue for Mrs. Bertha Hurlock.

Bridgeport.—The W. P. Kirk Co., has been awarded the contract for plumbing the addition to St. Vincent's hospital. J. Reilly, jr., the plumber, is to erect four new houses on Atlantic Street. Each house will be arranged for two six-room apartments and will be provided with separate heating plants and all modern improvements.

Manchester.—Bids for plumbing and heating the proposed new almshouse have been received by the board of selectmen as follows: Plumbing—Thomas Trotter, $1,115. Contract awarded to Trotter. Heating—Libby & Blinn, Hartford, $1,300; I. H. & C. Simmons, Bennington, Vt., $1,300; Ferris Bros., $1,150 and $1,200. Contract awarded to Ferris Bros. for $1,200.

Maine.

Portland.—Strict rules regarding plumbing inspectors at Peak's Island will be put into effect at once by order of the board of health. Plumbing Inspector Charles O. Morton recently made an investigation of conditions at the island and as a result the board voted that hereafter all work done on the island must be subject to a water test and other rules the same as work done in the city proper. Permits must also be secured at the office of the board of health.

Norway.—George H. Hersey, who recently sold his plumbing business here to Roberts, of Madison, is to move to St. Albans to follow the same line.

NEWS FROM PHILADELPHIA.

The graduating class from the plumbing department of the Philadelphia Trade Schools will hold its commencement exercises in the auditorium of the William Penn High School, at 15th and Mt. Vernon Streets, Philadelphia, on Friday, June 7th. Prizes and diplomas will be awarded.

Trade conditions in the plumbing business in Philadelphia show some improvement.

William D. Davies, 1667 Orthodox Street, Frankford, is installing the plumbing in the new building at 4861 Hawthorne Street for W. Koons.

W. H. McClain, 5920 Girard Avenue, has the contract to install the plumbing in eleven new houses on the west side of Sixty-first Street, north of Spruce Street, for Thomas Killough.

Wm. J. Robinson, jr., 6102 Ridge Avenue, will do the plumbing in the two new houses on the east side of Lauriston Street, southeast of Monestary Avenue, for A. Rowland. He will also install the plumbing in two houses on Wiegard Street, near Ridge Avenue, for A. Robinson.

Robert England, 5322 Market Street, has the contract for the plumbing in the 41 new houses at 601 to 641 and 600 to 638 North Gross Street; also 27 new houses, 601 to 637 and 620 to 634 North Sixty-fourth Street, for E. Thompson.

John J. Kelly, 3038 W. York Street, has secured the contract for the plumbing in 54 new houses on Bonsall Street, 2811 to 2863 and 2812 to 2864, for A. M. Zane.

The alterations and additions to the plumbing at 2507-09 East Allegheny Avenue, is being done by Frank Michelbach, 411 Poplar Street.

Storch & Scheid, 1102 Wolf Street, have the contract for plumbing in seven new houses at 2414 to 2426 Wharton Street.

W. D. Jackson, 1116 McKean Street, is making alterations and additions to the plumbing at 1433, 1435 and 1437 South 20th Street.

F. Erwin, 839 E. Woodlawn Avenue, Germantown, has the contract for the plumbing in the new building at 530 Lincoln Drive, for Wendell & Smith.

W. C. Busby, 5324 Oxford Pike, Philadelphia, is doing the plumbing in a new house for N. O. Westerman, on Rising Sun Lane.

S. C. Fitzpatrick, 1029 Christian Street, is making alterations and additions to the plumbing at 1916, 1918, 1920 and 1936 Wilder Street.

Benj. Fine, 2227 South 5th Street, is doing the plumbing at 402, 404, 406 and 408 Pierce Street, for Frank Cherks.

Harry F. Murphy & Co., Inc., 1619 Sansom Street, has the contracts for heating the Falls of Schuylkill Library and the Lincoln Institute.

Fred P. Speth, 3531 North Fifth Street, Philadelphia, Pa., has a large number of contracts on hand, among them the plumbing in 58 dwellings and four stores at Darien and Luzerne Streets. These are all to be equipped with up-to-date fixtures. He will also install hot water heating systems in the four stores. Mr. Speth expects an unusually good season this summer. He is a firm believer in advertising, one effective way being the use of slides in a moving picture theatre in his neighborhood as well as an attractive advertisement on theatre curtain. He also considers a neat wagon an effective advertisement for his business.

NEWS FROM WISCONSIN.

Stevens Point.—The second quarterly meeting of the Central Wisconsin Social, Benevolent and Sanitary club, composed of master plumbers in this and surrounding cities, was recently held here. The business meeting was held in Foresters Hall, and after a banquet, the visitors were entertained in the Elks club rooms. The next meeting will be held in July at Waupaca.

Eau Claire.—Proposals for installing the plumbing in the proposed two-story and basement brick school building in the Ninth ward are being received by the president of the board of education, Chas. H. Henry.

Merrill.—The heating and ventilating system in the new Sixth ward school was awarded by contract to the American Foundry and Furnace Co., of Milwaukee.

Milwaukee.—Several new plumbing and heating concerns have started in business in the state recently. Kusel & Kusel have opened a plumbing shop at 119 West Main St., Watertown. Both of the firm members are Watertown boys and are well known in the trade. Henry Schlueter and Charles Kiefer have purchased the plumbing business of the late William Schiebel at Watertown and will conduct the same at the old Schiebel stand. At Merrill, the Merrill Sheet Metal and Heating Co. has opened on Grand Ave. George Pavlick, late of the Fehland Hardware company, is at the head of the new concern.

Marinette.—Work on the new 280,000 gallon sedimentation tank has been started. Corlin Bros. have the contract for the foundation and will begin work immediately. The Wausau Iron company is ready to build the tank as soon as the foundation is laid. The water used in the city will pass through this tank to settle and then pass through the filter and sterilizer into the water mains.

Superior.—J. P. Wray & Co., pioneer plumbers of this city, have moved their office and shop to 1214 Ogden Street, from 1712 Twelfth Street. The firm, originally established in 1888, is composed of J. P. Wray and Archibald Gray.

NEWS FROM OHIO.

Columbus, O.—Architect Otto C. Darst has awarded the contract for the plumbing and heating for the Commercial Improvement Building on North Third Street to the Wm. H. Conklin Co. in this city.

Akron, O.—The city council has adopted an ordinance for the appropriation of almost $40,000 to take care of the improvements in the water works system of that city.

Canton, O.—A proposition to erect a garbage and sewage purification and disposal plant which could be taken over by the city at a later date has been made to Mayor Turnbull by C. D. Crouch of Cleveland, representative of a syndicate. While the system for disposing of the city's refuse is regarded by the mayor as the most practical he has heard of, the proposition submitted is beyond reason, he thinks.

NEWS FROM THE PACIFIC COAST.

San Francisco.

There is manifest this week in San Francisco a decidedly better tone to general business conditions. Contracts which have been withheld for the past few months are being awarded with more promptness and the effects of the seasonal building activity are being felt more encouragingly by the heating, ventilating and plumbing trades. Plumbing supply houses state that the market is awakening rapidly and that the outlook for a brisk demand all summer is most promising. While dissatisfaction is to be found here and there yet there is no reason to believe that the present year will not turn out better than last year. Conditions are easing up and the spirit of initiative enterprise is looming large again.

The month of April in the building operations on the Coast showed a large gain in the aggregate, especially in the amounts of registered contracts. March was a big month for building permits, yet on the whole, April shows a better record. While the permits for April in San Francisco were for the sum of $1,916,659, a loss of over a half a million dollars since March, yet the grand total of the recorded building contracts for April figures up to $3,435,334, a sum which exceeds the amount for any month since April, 1910. Over half of this amount will be expended for high class structures of brick and concrete. The gain in permit valuations over April, 1911, was over $100,000. Los Angeles shows a gain of about one million dollars in her April building permits over the preceding month. This is the largest gain of any of the Coast cities, and the valuation is $2,650,461. The gain for April over the same month a year ago is also about a million dollars. Portland is coming to the front again and her building permit valuation for April totaled $2,449,936, a gain of about three-quarters of a million over March, and a like gain over the month of April, 1911. The valuation of permits for Oakland in April, 1912, is $759,392, a slight loss from March and a slight gain over April, 1911. Sacramento, April, 1912, $210,685, a slight loss from March and also from April, 1911. San Diego's total for April was $1,062,631, about double her March record, and about three-quarters of a million greater than April, 1911.

Immediate action is to be taken by the public buildings committee of the Board of Supervisors for the removal of all the temporary buildings still standing within the fire limits. An appropriation has been made, and if owners do not comply promptly with the order to remove their shacks, the Board of Public Works will proceed to demolish such structures. Notices were served on about three hundred owners on May first.

On account of many alleged violations of the local sanitary regulations, Mayor Rolph has directed that rigid investigations of the actions of inspectors in the Health Department and the Board of Public Works be made immediately with the view of prosecuting the violators, and remedying the evil.

L. Rickersberg, vice president and sales manager of the Rickersberg Brass Co., manufacturers of plumbers' brass goods, of Cleveland, O., called on the local trade this week. Mr. Rickersberg came up from the south and he reports business west of Chicago greatly improved in the past month.

The General Engineering Co., 281 Natoma Street, which formerly represented the McCrum-Howell Co., of Chicago, in Northern California only, have had its territory extended to Oregon, Washington, Idaho and Utah and it is now installing vacuum cleaning systems throughout the new territory. G. E. F. Owen, who was with the McCrum-Howell Co., at Chicago, is in charge of this department for the General Engineering Co. and is doing valuable educational work in behalf of the vacuum cleaning system. J. J. Seibert, general manager, states that business is good and that much figuring on cleaning systems is going on. The company is just completing the vacuum piping for the San Francisco Girls' High School, besides installing systems in the new Presbyterian Church of Oakland, and the Pickering Apartments of San Francisco, among others.

Frank J. Klimm has been awarded the contract for the sewer, plumbing and gasfitting work on the three-story and basement brick and frame store and apartment building owned by M. Stelling and W. J. Horstmann, at Post and Larkin Streets. The amount of contract, $1,695.

Louis C. Huesman, of the Central Supply Co., of Indianapolis, Ind., the Union Foundry Co., of Anniston, Ala., and the Union Sanitary Manufacturing Co., of Noblesville, Ind., who has been calling on the trade in Los Angeles and the south, has left for the East.

David Grewar & Co., one of the pioneer plumbing firms of Nashville, Tenn., has lately moved to a new location at the corner of Third avenue north and Church street.

H. W. Thompson Plumbing Co., Dyersburg, Tenn., has been doing considerable work of late. Several residences and overhauling the Stevens Hotel were among the items. They also have the contract to lay water mains for the City Water and Light Co.

James L. Evans & Co., Memphis, Tenn., are installing the hot water heating and plumbing in the Dr. B. G. Henning residence.

GOVERNMENT CONTRACTS TO BE AWARDED.

Supervising Architect, James Knox Taylor, Treasury Department, Washington, D. C., will receive sealed proposals as follows:

Until 3 p. m., on June 27, 1912, for the extension, remodeling, etc., (including plumbing, gas piping, heating apparatus, electric conduits and wiring, and interior lighting fixtures), of the United States post office at Chester, Pa. The work contemplated is the construction of a two-story, basement and unfinished attic extension of approximately 2,300 square feet ground area. The first floor only is fireproof construction, exterior facing of stone and brick with slate roof, and there will be certain repairs and alterations in the present building.

Until 3 p. m., on June 26, 1912, for the construction complete (including plumbing, gas piping, heating apparatus, electric conduits and wiring, and interior lighting fixtures) of the United States post office at Newark, N. J. The building is one store and basement and has a ground area of approximately 3,900 square feet, non-fireproof construction, stone, brick and stucco facing, and tin roof.

Until 3 p. m., on June 25, 1912, for the construction complete (including plumbing, gas piping, heating apparatus, electric conduits and wiring, and interior lighting fixtures), of the United States post office at Mansfield, Ohio. The building is two stories and basement and has a ground area of approximately 7,800 square feet; first floor only of fireproof construction; tin roof; stone facing.

Until 3 p. m., on June 24, 1912, for the construction (including plumbing, gas piping, heating apparatus, electric conduits and wiring, and interior lighting fixtures), of the United States post office at Union, S. C. The building will be one story and basement, of approximately 4,117 square feet ground area, brick faced, with stone trimming and tin roof.

Until 3 p. m., on June 21, 1912, for the installation of a heating and ventilating apparatus, etc., for the United States post office and courthouse building in Charleston, W. Va.

Until 3 p. m., on June 18, 1912, for the construction, complete (including plumbing, gas piping, heating apparatus, electric conduits and wiring, and interior, lighting fixtures), of the United States post office at Kingfisher, Okla. The building is of one story, basement, mezzanine and unfinished attic, and has a ground area of approximately 3,800 square feet, non-fireproof construction, stone and stucco facing, and tile roof.

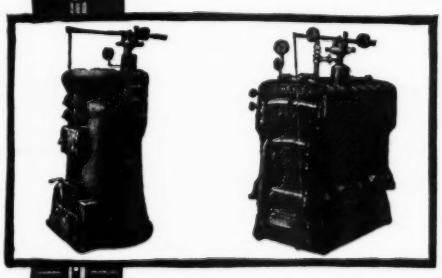
Until 3 p. m., on June 11, 1912, for an air-life pumping plant at the United States post office and court house at London, Ky.

Until 3 p. m., on July 1, 1912, for the construction (including plumbing, gas piping, heating apparatus, electric conduits and wiring, and interior lighting fixtures) of the United States post office at Newark, Ohio. The building is two stories and basement, and has a ground area of approximately 6,900 square feet; fireproof construction throughout; granite and marble facing; and tin roof.

All proposals should be in accordance with drawings and specifications, copies of which may be obtained from the custodians of the above sites, or from the Supervising Architect at Washington, D. C.

Washington, D. C.—Preparations for an early spring building season are being made by a number of the large contractors of the District of Columbia as indicated by permits being taken out for construction work. Harry Wardman, a local investor has taken out permits for approximately $105,000 worth of building, which is for fifty-six dwellings and twelve stores. Here is a good starter for some live plumber. Mr. Wardman states this is but a small part of what he expects to do during the coming season.

Building Boilers for Efficiency



Building a boiler for heating efficiency means building it to secure from every pound of fuel consumed in the fire pot the maximum number of heat units. A FURMAN BOILER will secure from coal the maximum number of heat units because of the extended heating surfaces, deep fire pot and long fire travel.

The steamfitter who recommends a FURMAN BOILER to a house owner secures a satisfied customer for life, because with reasonable care a FURMAN BOILER will last a lifetime.

FURMAN BOILERS are made in Round and Sectional type for both steam and hot water heating. They are made in a wide range of capacities.

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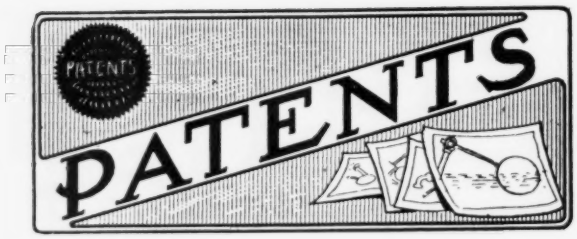
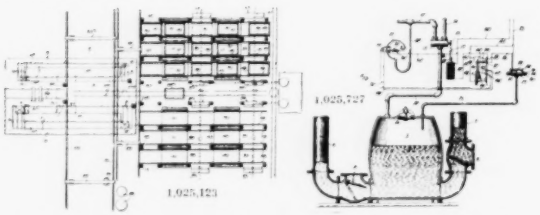
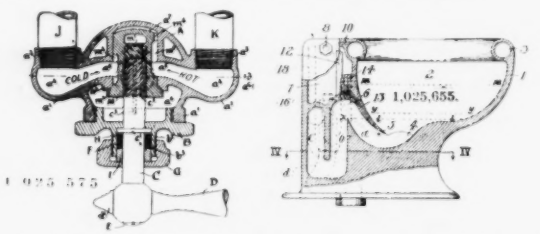


Plumbing Department.

1,025,123. System of Apparatus for Casting Pipe and Other Hollow Articles. William E. Clow, Chicago, Ill. A system of apparatus for casting pipe, having a plurality of trucks, a plurality of horizontal elevated stationary tracks upon which the trucks run, a plurality of flasks supported by and depending from said trucks vertically with respect to said tracks, a plurality of comparatively short movable tracks located at opposite ends of the stationary tracks and parallel therewith, and means for supporting the movable tracks at the same horizontal level as the stationary tracks, said supporting means being movable whereby the movable tracks may be brought to register, end to end, with any of the stationary tracks to form continuations thereof.



1,025,727. Water and Sewage Ejector. Arthur Cornwall Wells, Amityville, N. Y. In a water and sewage ejector a tank having an inlet and an outlet each commanded by a check valve, a conduit having two branches, connected with the tank, a valve commanding the branches, a solenoid, an armature commanded by the solenoid having means for operating the valve, a circuit for energizing the solenoid, a switch in the circuit, electrical means for throwing the switch, a Bourdon tube connected with one of the branches, and a switch commanded by the said Bourdon tube for controlling the electrical means.



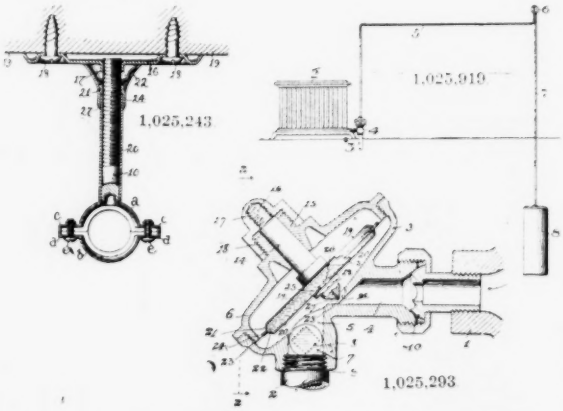
1,025,575. Mixing-Valve. Engelbert Kieweg, Henry Moeller, and Frank Wagner, Milwaukee, Wis. In a mixing-valve, the combination with a cylindrical chamber having ports on opposite sides thereof, of a centrally closed valve-plug reciprocating in said chamber and having recesses on its opposite sides subtending the respective ports; and means for non-rotatively reciprocating said plug; both of said recesses lying within the outer margin of said chamber when the plug is in its inmost position; and one of said recesses being adapted to extend beyond the margin of said chamber before the other as said plug is moved out and further to pass beyond its port and close it off as said plug is further moved out while the other recess is still opposite to its port and extending beyond the margin of said chamber.

1,025,655. Water-Closet. James Albert Stevenson and Lewis Oliver Phillips, New Castle, Pa. In a device of the character described, the combination with a suitable bowl and communicating outlet system, involving two water seals and an intermediate air trap, of an air reservoir; a connection from the reservoir into one of the water seals; a drain duct opening out of the reservoir; and terminating in one of said water seals; an auxiliary air trap communicating with the first mentioned trap; means for supplying water to the bowl, air reservoir, and auxiliary air trap; and means for removing the water from said auxiliary trap to effect an escapement of air from the first mentioned trap.

Heating Department.

1,025,243. Pipe-Hanger. Lewis A. Carpenter and Richard Middleton, Revere, Mass. In a pipe hanger, in combination, sheet-metal pipe-engaging members, a threaded rod secured to one of said members, a sheet metal base plate having a threaded nipple with which the free end of said rod engages, a sleeve loose on said threaded rod, a nut on said threaded rod having at one end a cylindrical extension for the reception of one end of said sleeve, and having at its other end a clamping extension and an external shoulder, and a sheet metal bell abutting against said shoulder and secured to said nut by said clamping extension, substantially as described.

1,025,919. Heat-Controlling Device for Radiators. Thomas K. Lysinger, Wilkinsburg, Pa. The combination with a radiator having a connection for supplying it with a heated heating fluid, a valve for controlling the supply of such fluid, and a motor for actuating the valve, of a wall plug located in the wall of the apartment in which the radiator is placed, a pipe connection leading from said plug to the radiator valve motor and also from said plug to a source of pressure supply, an attachment secured to the plug and having ports therein which communicate with the said pipe connections, and a hand valve mounted in said attachment and controlling said ports, substantially as described.



1,025,293. Steam-Trap. George W. Nistle, Muskegon, Mich., assignor to Illinois Engineering Company, Chicago, Ill., a corporation of Illinois. In a thermostatic trap, the combination with a thermostat casing, of a thermostatic member seated therein and comprising a pair of spaced apart plates bent toward each other at their edges to form side walls, one of said side walls terminating in an outstanding flange, and the other of said side walls terminating in a hook shaped flange crimped around and having interlocking engagement with said first flange, one of said plates having an aperture through which the thermostatic member may be filled with a volatile liquid, a fitting for said aperture and soldered to the plate, said fitting having a gas vent to permit the escape of gas developed in soldering and adapted to be closed after soldering is completed, and a fitting secured to the opposite plate.

South Bend, Ind.—W. W. Sibley Co. has been incorporated with a capital of $10,000 to conduct a plumbing business. The incorporators are W. W. Sibley, F. Sibley and G. C. White.

Chicago, Ill.—The E. J. Claffey Co. has been incorporated with a capital of $2,500 to conduct a plumbing and heating business. The incorporators are: E. J. Claffey, C. F. Claffey and T. R. Claffey, jr.